Child Psychology

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How to Read this Textbook

Organization

Chapters are organized predictably with figures, tables, and videos that further organize and explain course concepts. The videos that are directly embedded in the reading are mini-lectures on the concept and are recommended to help you understand complex ideas.

Learning Objectives

Before reading, review the learning objectives for the chapter. These objectives help guide your focus.

Exercises

Exercises provide you will an opportunity to practice and reflect on the concepts that you are learning.

Examples

Case studies, interviews, examples, and current events highlight concepts in practice. This content is not a direct explanation of concepts but exemplifies how it applies in the real world.

Effective Reading

Reading a textbook is not like reading a novel. Opening a book and reading from cover to cover does not typically result in an effective reading of the content. One of the most recommended methods for effective reading is the SQ4R method. SQ4R is an acronym for: Survey, Question, Read, Respond, Record, and Review. The SQ4R method may seem time-consuming at first, but once you know the steps, it only takes a few minutes.

What are the benefits of using SQ4R?

- It's an active learning strategy that can be adapted to suit an individual's study preferences.
- It provides a strategy to retain a lot of factual detail, reducing the amount of information that has to be relearned for exams.
- It prompts the creation of study material to be used when preparing for exams.
- It helps to identify errors or areas of confusion.

Step 1: Survey the Textbook and Chapters

- Read the preface and introduction to the text, and browse through the table of contents and the index. This section describes the main topics and the basic organizational structure of the book.
- Read the introduction and conclusion in each chapter and subsection.
- Scan the titles and subtitles. Study the pictures, charts, or graphs.
- Read the summary and any chapter questions.

Step 2: Start with a Question

- Take the section title, subtitle, or the first sentence of each paragraph and turn it into a question.
- For example: "Functions of the spinal cord" becomes "What are the functions of the spinal cord?"

Step 3: Read Actively

- Read carefully and actively by creating a "dialogue" with the text.
- Try to find the answer to the question you created, and ask questions as you read.
- Be careful not to skim the text looking for the answer, as you might miss other important information.

Step 4: Respond to Your Question

- Close the textbook and answer the question you created in

your own words.
- If you can't answer the question, reread the section until you can.
- If, after a few tries, you still can't answer the question, go on to the next few sections and see if things become clearer.
- If that doesn't help, you may need to change your question. Try making it broader or narrower.
- If changing your question doesn't help, get some assistance. Your instructor or TA are good places to start, or contact Learning Services.

Step 5: Record Your Notes

- Once you understand the material and can summarize it in your own words make a record of it.
- Common methods are highlighting and/or marking the text, or taking notes, or some combination of both.
- Whichever methods you choose, it's critical to read and understand the material first, and then go back and record.
- See below for the pros and cons of notetaking and highlighting.
- See our resources for help with note-taking.

Step 6: Review Your Notes

- Do a thorough review of lecture and text notes weekly, and briefly before each class.
- Make weekly review periods effective by starting from the beginning of the course in each review session. Though the volume of review material increases as the semester progresses, the amount of time needed to review older material decreases. After you've reviewed the first week's material a few times, it will take only minutes to skim over it

and recall the key points.



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Other Books by Author

Adolescent Psychology
Educational Psychology

STUDYING CHILD PSYCHOLOGY

Learning Objectives

- Describe development and its three domains: physical, cognitive, and psychosocial development
- Explain key human development issues about the nature of change: continuous/discontinuous, one course/multiple courses, and nature/nurture
- Describe the basic periods of human development
- Describe Baltes' lifespan perspective with its key principles about development
- Explain what is meant by development being lifelong, multidimensional, and multidirectional
- Explain contextual influences on development

Child psychology is the study of human development with a focus on the childhood years and issues specific to this age group. The exact years considered childhood may vary. For this course, we will cover development from conception through adolescence. In general, development examines patterns of growth, change, and stability by applying universal principles of development, including variations due to culture, race, ethnicity, and individual differences. The study of development investigates changes in the physical or biological, cognitive, and psychosocial of socioemotional domains, as well as the interactions between changes in these domains.

While we will be studying the period that we call childhood, it is important to remember that developmental age ranges are social

constructs. People mature at different rates and reach milestones at various points; we most often refer to milestone averages, but some people will be above or below the average. Environmental factors also influence development. Variations in development may exist in different cultures. When we discuss developmental theories and milestones, we are discussing the average, typical, or trend that applies to the most significant segments of the population. Individual and cultural variations exist and do not necessitate abnormality or concern.

You will discover that no matter the age, domain, or topic of study, developmental psychologists consider several key questions. Is development continuous or discontinuous? Is development active or passive? Are there critical periods of development or only sensitive periods? Is development a result of nature or nurture? Does development vary due to cohort effects, sociocultural influences, and life events? In this chapter, we will explore these questions more in-depth.

Human Development

Development refers to the physical, cognitive, and psychosocial development of humans throughout the lifespan. What types of development are involved in each of these three domains, or areas, of life? Physical development involves growth and changes in the body and brain, the senses, motor skills, and health and wellness. Cognitive development involves learning, attention, memory, language, thinking, reasoning, and creativity. Psychosocial development involves emotions, personality, and social relationships.

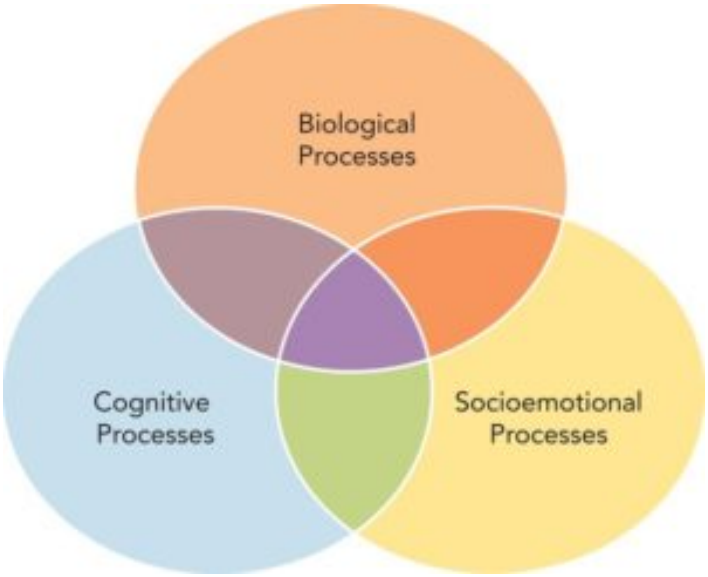


Figure 1. Physical, cognitive, and psychosocial development are interrelated.

Physical Domain

Many of us are familiar with the height and weight charts that pediatricians consult to estimate if babies, children, and teens are growing within normative ranges of physical development. We may also be aware of changes in children's fine and gross motor skills, as well as their increasing coordination, particularly in terms of playing sports. But we may not realize that physical development also involves brain development, which not only enables childhood motor coordination but also greater coordination between emotions and planning in adulthood, as our brains are not done developing in infancy or childhood. Physical development also includes puberty, sexual health, fertility, menopause, changes in our senses, and healthy habits with nutrition and exercise.

Cognitive Domain

If we watch and listen to infants and toddlers, we can't help but wonder how they learn so much so fast, particularly when it comes to language development. Then as we compare young children to those in middle childhood, there appear to be considerable differences in their ability to think logically about the concrete world around them. Cognitive development includes mental processes, thinking, learning, and understanding, and it doesn't stop in childhood. Adolescents develop the ability to think logically about the abstract world (and may like to debate matters with adults as they exercise their new cognitive skills!). Moral reasoning develops further, as does practical intelligence—wisdom may develop with experience over time. Memory abilities and different forms of intelligence tend to change with age. Brain development and the brain's ability to adapt and compensate for losses is significant to cognitive functions across the lifespan, too.

Psychosocial Domain

Development in the psychosocial (or socioemotional) domain involves what's going on both psychologically and socially. Early on, the focus is on infants and caregivers, as temperament and attachment are significant. As the social world expands and the child grows psychologically, different types of play and interactions with other children and teachers become essential. Psychosocial development involves emotions, personality, self-esteem, and relationships. Peers become more important for adolescents, who are exploring new roles and forming their own identities. Dating, romance, cohabitation, marriage, having children, and finding work or a career are all parts of the transition into adulthood. Psychosocial development continues across adulthood with similar (and some different) developmental issues of family, friends, parenting, romance, divorce, remarriage, blended families, caregiving for elders, becoming grandparents and great grandparents, retirement, new careers, coping with losses, and death and dying.

As you may have already noticed, physical, cognitive, and psychosocial development are often interrelated, Puberty exemplifies this interaction well. Puberty is a biological change that releases hormones that spurs the maturation of sex organs and physical growth. However, puberty also triggers changes within the brain that affect cognition, emotions, and social relationships. Puberty often comes with mood swings, but also, improved ability to self-regulate. Puberty is also when relationships change with parents and peers. While puberty may be a topic within the physical domain, there is clearly an interaction with the other areas.



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here:
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Video 1. *Domains in Development* describes the three domains and how those domains interact.



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Who Studies Development and Why?

Many academic disciplines contribute to the study of development and developmental psychology is related to other applied fields. The study of development informs several applied fields in psychology, including educational psychology, psychopathology, and forensic developmental psychology. It also complements several other specific areas of psychology, including social psychology, cognitive psychology, and comparative psychology. This multidisciplinary course is made up of contributions from researchers in the areas of biology, health care, anthropology, nutrition, and sociology, among others.

The main goals of those involved in studying development are to describe, predict, and explain changes. Throughout this course,

we will describe observations during development, predict courses and milestones for change, and then examine how theories provide explanations for why these changes occur.

Key Issues in Development

There are many different theoretical approaches regarding human development. As we evaluate them in this course, recall that development focuses on how people change, and the approaches address the nature of change in different ways:

- Are changes an active or passive process?
- Is the change smooth or uneven (continuous versus discontinuous)?
- Is this pattern of change the same for everyone, or are there different patterns of change (one course of development versus many courses)?
- Are there prescribed periods in which change must occur (critical and sensitive periods)?
- How do genetics and environment interact to influence development (nature versus nurture)?

Is Development Active or Passive?

How much does one play a role in their developmental path? Are we at the whim of our genetic inheritance or the environment that surrounds you, or are we able to decide and steer our development? Some theorists believe that humans play a much more active role in their development. Piaget, for instance, believed that children actively explore their world and construct new ways of thinking to explain the things they experience. Humanist theorists forward that people have self-determination. In contrast, many behaviorists view humans as being more passive in the developmental process, with outcomes being determined by their experiences. Evolutionary psychologists emphasize the role of heredity in determining development. As we explore various theories, ask yourself whether

each approach considers development to be an active or passive process.

Is Development Continuous or Discontinuous?

Is human development best characterized as a slow, gradual process, or as one of more abrupt change? The answer to that question often depends on which developmental theorist you ask and which topic is being studied. **Continuous development** theories view development as a cumulative process, gradually improving on existing skills (see figure below). With this type of development, there is a gradual change. Consider, for example, a child's physical growth: adding inches to their height year by year. In contrast, theorists who view development as **discontinuous** believe that development takes place in unique stages and that it occurs at specific times or ages. With this type of development, the change is more sudden, such as an infant's ability to demonstrate awareness of object permanence (which is a cognitive skill that develops toward the end of infancy, according to Piaget's cognitive theory—more on that theory in the next module).

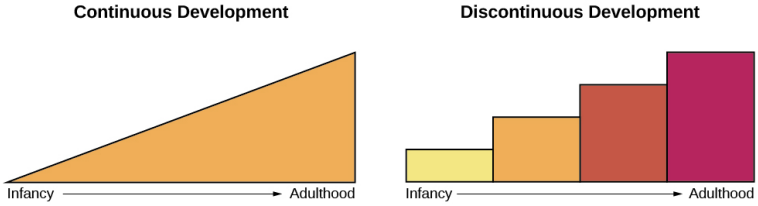


Figure 1. Visualizations of continuous and discontinuous development.

Is There One Course of Development or Many?

Is development essentially the same, or universal, for all children

(i.e., there is one course of development) or does development follow a different course for each child, depending on the child's specific genetics and environment (i.e., there are many courses of development)? Do people across the world share more similarities or more differences in their development? How much do culture and genetics influence a child's behavior?

Stage theories hold that the sequence of development is universal. For example, in cross-cultural studies of language development, children from around the world reach language milestones in a similar sequence (Gleitman & Newport, 1995). Infants in all cultures coo before they babble. They begin babbling at about the same age and utter their first word around 12 months old. Yet we live in diverse contexts that have a unique effect on each of us. For example, researchers once believed that motor development followed one course for all children regardless of culture. However, childcare practices vary by culture, and different practices have been found to accelerate or inhibit the achievement of developmental milestones such as sitting, crawling, and walking (Karasik, Adolph, Tamis-LeMonda, & Bornstein, 2010).

For instance, let's look at the Aché society in Paraguay. They spend a significant amount of time foraging in forests. While foraging, Aché mothers carry their young children, rarely putting them down to protect them from getting hurt in the forest. Consequently, their children walk much later: They walk around 23–25 months old, in comparison to infants in Western cultures who begin to walk around 12 months old. However, as Aché children become older, they are allowed more freedom to move about, and by about age 9, their motor skills surpass those of U.S. children of the same age: Aché children can climb trees up to 25 feet tall and use machetes to chop their way through the forest (Kaplan & Dove, 1987). As you can see, our development is influenced by multiple contexts, so the timing of basic motor functions may vary across cultures. However, the functions are present in all societies.



(a) (b)

Figure 2. All children across the world love to play. Whether in (a) Florida or (b) South Africa, children enjoy exploring sand, sunshine, and the sea.

Are there Critical or Sensitive Periods of Development?

Various developmental milestones are universal in timing. For example, most children begin learning and expressing language during their first year. However, what happens if a person misses that window of typical experience? What if the child were not exposed to language early in life, could they learn language in later years? Does the timing of experience influence development, and can it be corrected later?

Psychologists believe that there are time spans in which a person is biologically ready for certain developments, but successful progress is reliant on the person having essential experiences during that time. If these experiences fail to occur or occur after the time span ends, then the person will not develop normally or may not fully recover, even with later intervention.

Some aspects of development have critical periods; finite time spans in which specific experiences must occur for successful development. Once this period ends, later experiences would have

no impact on this aspect of development. Failure to have the necessary experiences during the critical period will result in permanent impairments. For instance, a person that does not receive minimal nutrition during childhood would not reach their full height potential by adulthood. Even with excellent nutrition during adulthood, they would never grow taller because their critical period of growth has ended.

More often, developmental aspects are considered to have sensitive periods. Like critical periods, a sensitive period requires particular experiences during a specific time for development to occur. However, with sensitive periods, experiences after the period ends can support developmental gains later in life. It is not to say that post-period interventions will always be simple or successful. For example, someone that was not exposed to language in early childhood, with intervention and great effort, may be able to make some gains in late childhood, but may not fully recover all language-related skills.



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Video 1. *Sensitive vs Critical Periods of Learning* explains the differences between the two

How Do Nature and Nurture Influence Development?

Are we who we are because of genetics, or are we who we are because of our environment? For instance, why do biological children sometimes act like their parents—is it because of genetics or because of early childhood environment and what the child has learned from their parents? What about children who are adopted—are they more like their biological families or more like their adoptive families? And how can siblings from the same family be so different?

This longstanding question is known in psychology as the nature versus nurture debate. For any particular aspect of development, those on the side of **nature** would argue that heredity plays the most important role in bringing about that feature. While those on the side of **nurture** would say that one's environment is most significant in shaping the way we develop. However, most scholars agree that there is a constant interplay between the two forces. It is difficult to isolate the root of any single outcome as a result solely of nature or nurture.

We are all born with specific genetic traits inherited from our parents, such as eye color, height, and certain personality traits. Beyond our basic genotype, however, there is a deep interaction between our genes and our environment. Our unique experiences in our environment influence whether and how particular traits are expressed, and at the same time, our genes influence how we interact with our environment (Diamond, 2009; Lobo, 2008). There is a reciprocal interaction between nature and nurture as they both shape who we become, but the debate continues as to the relative contributions of each.



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Video 2. *Gene-Environment Interaction* explains how nature and nurture interact to influence development.

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The Forbidden Experiment

As previously discussed, psychologists are interested in the role of nature and nurture on human development. It is almost impossible to remove the influence of either nature or nurture to study only the influence of the other. The closest that we have come to this is the study of feral children.

A **feral child** (also called a **wild child**) is a human child who has lived isolated from human contact from a very young age, and so has had little or no experience of human care, behavior, or human language. There are several confirmed cases and other speculative ones. Feral children may have experienced severe abuse or trauma before being abandoned or running away. The following three cases are examples of feral children that spent part of their lives isolated from normal human society. Examining these cases helps us better understand the key concept of nature versus nurture. Note some of the differences between these cases and consider why these differences may exist.

Oxana



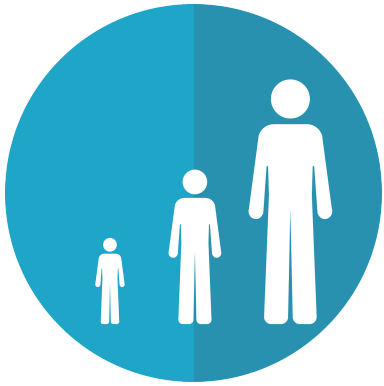
John



Genie

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The Lifespan Perspective



Development has been presented as a theoretical perspective, proposing several fundamental, theoretical, and methodological principles about the nature of human development. An attempt by researchers has been made to examine whether research on the nature of development suggests a specific metatheoretical worldview. Several beliefs, taken together, form the "family of perspectives" that contribute to this particular view.

German psychologist Paul Baltes (1987), a leading expert on development, established one of the most widely accepted approaches to studying development called the **lifespan perspective**. This approach is based on several key assumptions:

- Development occurs across one's entire life, or is *lifelong*.
- Development is *multidimensional*, meaning it involves the dynamic interaction of factors like physical, emotional, and psychosocial development
- Development is *multidirectional* and results in gains and losses throughout life
- Development is *plastic*, meaning that characteristics are malleable or changeable.
- Development is influenced by *contextual* and socio-cultural influences.
- Development is *multidisciplinary*.

Development is Lifelong

Lifelong development means that change is not completed in infancy or childhood or at any specific age; it encompasses the entire lifespan, from conception to death. The study of development traditionally focused almost exclusively on the changes occurring from conception to adolescence and the gradual decline in old age; it was believed that the five or six decades after adolescence yielded little to no developmental change at all. The current view reflects the possibility that specific changes in development can occur later in life, without having been established at birth. Later events in one's life can transform the early events of one's childhood. This belief clearly emphasizes that all stages of the lifespan contribute to the regulation of the nature of human development.

Many diverse patterns of change, such as direction, timing, and order, can vary among individuals and affect how they develop. For example, the developmental timing of events can affect individuals in different ways because of their current level of maturity and understanding. As individuals move through life, they are faced with many challenges, opportunities, and situations that impact their development. Remembering that development is a lifelong process helps us gain a broader perspective on the meaning and impact of each event.

Development is Multidimensional

By multidimensionality, Baltes is referring to the fact that a complex interplay of factors influences development across the lifespan, including biological, cognitive, and socioemotional changes. Baltes argues that a dynamic interaction of these factors is what affects an individual's development.

For example, in adolescence, puberty consists of physiological

and physical changes with changes in hormone levels, the development of primary and secondary sex characteristics, alterations in height and weight, and several other bodily changes. But these are not the only types of changes taking place; there are also cognitive changes, including the development of advanced cognitive faculties such as the ability to think abstractly. There are also emotional and social changes involving regulating emotions, interacting with peers, and possibly dating. The fact that the term puberty encompasses such a broad range of domains illustrates the multidimensionality component of development (think back to the physical, cognitive, and psychosocial domains of human development we discussed earlier).



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Development is Multidirectional

Baltes states that the development of a particular domain does not occur in a strictly linear fashion but that development of certain traits can be characterized as having the capacity for both an increase and a decrease in efficacy over the course of an individual's life.

If we use the example of puberty again, we can see that certain domains may improve or decline in effectiveness during this time. For example, self-regulation is one domain of puberty which undergoes profound multidirectional changes during the

adolescent period. During childhood, individuals have difficulty effectively regulating their actions and impulsive behaviors. Scholars have noted that this lack of effective regulation often results in children engaging in behaviors without fully considering the consequences of their actions. Throughout puberty, neuronal changes modify this unregulated behavior by increasing the ability to regulate emotions and impulses. Inversely, the ability for adolescents to engage in spontaneous activity and creativity, both domains commonly associated with impulse behavior, decrease over the adolescent period in response to changes in cognition. Neuronal changes to the limbic system and prefrontal cortex of the brain, which begin in puberty, lead to the development of self-regulation, and the ability to consider the consequences of one's actions (though recent brain research reveals that this connection will continue to develop into early adulthood).

Extending on the premise of multidirectionality, Baltes also argued that development is influenced by the "joint expression of features of growth (gain) and decline (loss)" (Baltes, 1987). This relation between developmental gains and losses occurs in a direction to selectively optimize particular capacities. This requires the sacrificing of other functions, a process known as selective optimization with compensation. According to the process of selective optimization, individuals prioritize particular functions above others, reducing the adaptive capacity of particulars for specialization and improved efficacy of other modalities.

The acquisition of effective self-regulation in adolescents illustrates this gain/loss concept. As adolescents gain the ability to regulate their actions effectively, they may be forced to sacrifice other features to selectively optimize their reactions. For example, individuals may sacrifice their capacity to be spontaneous or creative if they are constantly required to make thoughtful decisions and regulate their emotions. Adolescents may also be forced to sacrifice their fast reaction times toward processing stimuli in favor of being able to consider the consequences of their actions fully.

Development is Plastic

Plasticity denotes intrapersonal variability and focuses heavily on the potentials and limits of the nature of human development. The notion of plasticity emphasizes that there are many possible developmental outcomes and that the nature of development is much more open and pluralistic than originally implied by traditional views; there is no single pathway that must be taken in an individual's development across the lifespan. Plasticity is imperative to current research because the potential for intervention is derived from the notion of plasticity in development. Undesired development or behaviors could potentially be prevented or changed.

As an example, recently, researchers have been analyzing how other senses compensate for the loss of vision in blind individuals. Without visual input, blind humans have demonstrated that tactile and auditory functions still fully develop, and they can use tactile and auditory cues to perceive the world around them. One experiment designed by Röder and colleagues (1999) compared the auditory localization skills of people who are blind with people who are sighted by having participants locate sounds presented either centrally or peripherally (lateral) to them. Both congenitally blind adults and sighted adults could locate a sound presented in front of them with precision, but people who are blind were superior in locating sounds presented laterally. Currently, brain-imaging studies have revealed that the sensory cortices in the brain are reorganized after visual deprivation. These findings suggest that when vision is absent in development, the auditory cortices in the brain recruit areas that are normally devoted to vision, thus becoming further refined.



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Development is Contextual

In Baltes' theory, the paradigm of contextualism refers to the idea that three systems of biological and environmental influences work together to influence development. Development occurs in context and varies from person to person, depending on factors such as a person's biology, family, school, church, profession, nationality, and ethnicity. Baltes identified three types of influences that operate throughout the life course: normative age-graded influences, normative history-graded influences, and non-normative influences. Baltes wrote that these three influences operate throughout the life course, their effects accumulate with time, and, as a dynamic package, they are responsible for how lives develop.

Normative age-graded influences are those biological and environmental factors that have a strong correlation with chronological age, such as puberty or menopause, or age-based social practices such as beginning school or entering retirement. **Normative history-graded influences** are associated with a specific time period that defines the broader environmental and cultural context in which an individual develops. For example, development and identity are influenced by historical events of the people who experience them, such as the Great Depression, WWII, Vietnam, the Cold War, the War on Terror, or advances in technology.

This has been exemplified in numerous studies, including

Nesselroade and Baltes', showing that the level and direction of change in adolescent personality development was influenced as strongly by the socio-cultural settings at the time (in this case, the Vietnam War) as age-related factors. The study involved individuals of four different adolescent age groups whom all showed significant personality development in the same direction (a tendency to occupy themselves with ethical, moral, and political issues rather than cognitive achievement). Similarly, Elder showed that the Great Depression was a setting that significantly affected the development of adolescents and their corresponding adult personalities by showing a similar common personality development across age groups. Baltes' theory also states that the historical socio-cultural setting had an effect on the development of an individual's intelligence. The areas of influence that Baltes thought most important to the development of intelligence were health, education, and work. The first two areas, health and education, significantly affect adolescent development because healthy children who are educated effectively will tend to develop a higher level of intelligence. The environmental factors, health and education, have been suggested by Neiss and Rowe to have as much effect on intelligence as inherited intelligence.

Non-normative influences are unpredictable and not tied to a certain time in a person's development or to a historical period. They are the unique experiences of an individual, whether biological or environmental, that shape the development process. These could include milestones like earning a master's degree or getting a certain job offer or other events like going through a divorce or coping with the death of a child.

The most important aspect of contextualism as a paradigm is that the three systems of influence work together to affect development. Concerning adolescent development, the age-graded influences would help to explain the similarities within a cohort, the history-graded influences would help to explain the differences between cohorts, and the non-normative influences would explain the idiosyncrasies of each adolescent's individual development. When

all influences are considered together, it provides a broader explanation of an adolescent's development.



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Other Contextual Influences on Development: Cohort, Socioeconomic Status, and Culture

What is meant by the word "context"? It means that we are influenced by when and where we live. Our actions, beliefs, and values are a response to the circumstances surrounding us. Sternberg describes contextual intelligence as the ability to understand what is called for in a situation (Sternberg, 1996). The key here is to understand that behaviors, motivations, emotions, and choices are all part of a bigger picture. Our concerns are such because of who we are socially, where we live, and when we live; they are part of a social climate and set of realities that surround us. Important social factors include cohort, social class, gender, race, ethnicity, and age. Let's begin by exploring two of these: cohort and social class.

A **cohort** is a group of people who are born at roughly the same time period in a particular society. Cohorts share histories and contexts for living. Members of a cohort have experienced the same historical events and cultural climates which have an impact on the values, priorities, and goals that may guide their lives. Consider the differences in experiences of someone from the 'Silent' generation

that lived with constant scarcity and rationing during WWII versus the economic prosperity that followed for the 'Baby Boomer' generation and how those historical contexts influence their development.

watch it

Video 1.4.1. *Generations Throughout History* describes the normative history-graded influences that shaped the development of seven generations over the past 125 years of United States history. Can you identify your generation? Does the description seem accurate?



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Another context that affects our lives is our social standing, socioeconomic status, or social class. **Socioeconomic status** is a way to identify families and households based on their shared levels of education, income, and occupation. While there is certainly individual variation, members of a social class tend to share similar lifestyles, patterns of consumption, parenting styles, stressors, religious preferences, and other aspects of daily life. We also find differences between social classes in these and other areas of development. Often, those in low socioeconomic groups, people

living in poverty, are disadvantaged, lack of opportunities, and have different life experiences than those with more financial stability and wealth.

Poverty describes the state of not having access to material resources, wealth, or income, and also includes the lack of opportunity to improve one's standard of living and acquire resources. **Life chances** is a term used to describe someone's access to marketplace resources—essentially, how likely it is in their environment that they might be able to find employment or have a social safety net. Someone who is living in poverty but has high life chances may be able to improve their economic standing, but someone with low life chances will likely have a consistently low standard of living. The term for a person's ability to change their economic status in a society is known as **social mobility**.

When families have low social mobility, they may become trapped in poverty for generations; we refer to this as the **cycle of poverty**. Typically, these families have either limited or nonexistent social and economic resources. There are many disadvantages that collectively work in a circular process to make it virtually impossible for individuals to break the cycle of poverty. They are less likely to have financial capital, education, job skills, reliable transportation, and social capital (connections to people with specialized knowledge or in power). Without these resources, poverty-stricken individuals experience disadvantages that, in turn, increase their poverty.

Additionally, those living in poverty suffer disproportionately from hunger, poor nutrition, and exhibit disproportionately high rates of physical and mental health issues. These illnesses can be disabling, preventing people in poverty from working, thus reducing one's opportunities to improve their social and economic status.

Finally, poverty increases the risk of homelessness. People who are homeless have low access to neighborhood resources, high-status social contacts, or basic services such as a phone line, limiting their ability to improve their economic position, again perpetuating poverty.

Culture is often referred to as a blueprint or guideline shared by a group of people that specifies how to live. It includes ideas about what is right and wrong, what to strive for, what to eat, how to speak, what is valued, as well as what kinds of emotions are called for in certain situations. Culture teaches us how to live in a society and allows us to advance because each new generation can benefit from the solutions found and passed down from previous generations.

Culture is learned from parents, schools, churches, media, friends, and others throughout a lifetime. The kinds of traditions and values that evolve in a particular culture serve to help members function in their society and to value their society. We tend to believe that our own culture's practices and expectations are the right ones. This belief that our own culture is superior is called ethnocentrism and is a normal by-product of growing up in a culture. It becomes a roadblock, however, when it inhibits understanding of cultural practices from other societies. Cultural relativity is an appreciation for cultural differences and the understanding that cultural practices are best understood from the standpoint of that particular culture.

Culture is a crucial context for human development, and understanding development requires being able to identify which features of development are culturally based. This understanding is somewhat new and still being explored. So much of what developmental theorists have described in the past has been culturally bound and difficult to apply to various cultural contexts. For example, Erikson's theory that teenagers struggle with identity assumes that all teenagers live in a society in which they have many options and must make an individual choice about their future. In many parts of the world, one's identity is determined by family status or society's dictates. In other words, there is no choice to make.

Even the most biological events can be viewed in cultural contexts that are incredibly varied. Consider two very different cultural responses to menstruation in young girls. In the United States, girls

in public schools often receive information on menstruation around 5th grade, get a kit containing feminine hygiene products, and receive some sort of education about sexual health. Contrast this with some developing countries where menstruation is not publicly addressed, or where girls on their period are forced to miss school due to limited access to feminine products or unjust attitudes about menstruation.

How Does socioeconomic status affect language development?

The achievement gap refers to the persistent difference in grades, test scores, and graduation rates that exist among students of different ethnicities, races, and—in certain subjects—sexes (Winerman, 2011). Research suggests that these achievement gaps are strongly influenced by differences in socioeconomic factors that exist among the families of these children. Low-income children perform significantly more poorly than their middle- and high-income peers on a number of educational variables: They have significantly lower standardized test scores, graduation rates, and college entrance rates, and they have much higher school dropout rates. Many of these problems start before the children even enter school.

Psychologists Betty Hart and Todd Risley (2006) spent their careers looking at early language ability and progression of children in various income levels. In one longitudinal study, researchers found that although all the parents in the study engaged and interacted with their children, middle- and high-income parents interacted with their children differently than low-income parents. The

researchers found that middle- and high-income parents talk to their children significantly more, starting when the children are infants. By age 3, high-income children knew almost double the number of words known by low-income children, and they heard about 30 million more words than the low-income counterparts (Hart & Risley, 2003). These gaps become more pronounced by kindergarten, with high-income children scoring 60% higher on achievement tests than their low-income peers (Lee & Burkam, 2002).

There are solutions to this problem. Experts are working with low-income families to encourage them to speak more to their children and designing preschools in which students from diverse economic backgrounds are placed in the same classroom (Schechter & Byeb, 2007).

Development is Multidisciplinary

Any single discipline's account of development across the lifespan would not be able to express all aspects of this theoretical framework. That is why it is suggested explicitly by lifespan researchers that a combination of disciplines is necessary to understand development. Psychologists, sociologists, neuroscientists, anthropologists, educators, economists, historians, medical researchers, and others may all be interested and involved in research related to the normative age-graded, normative history-graded, and nonnormative influences that help shape development. Many disciplines contribute important concepts that integrate knowledge, which may ultimately result in the formation of a new and enriched understanding of development across the lifespan.

THINK IT OVER

- Consider your cohort. Can you identify it? Does it have a name, and if so, what does the name imply? To what extent does your cohort shape your values, thoughts, and aspirations? (Some cohort labels popularized in the media for generations in the United States include Baby Boomers, Generation X, Millennials, and Generation Z.)
- Think of other ways culture may have affected your development. How might cultural differences influence interactions between teachers and students, nurses and patients, or other relationships?

Glossary

continuous development: the idea that development is a progressive and cumulative process, gradually improving on existing skills

cohort: a group of people who are born at roughly the same period in a particular society. Cohorts share histories and contexts for living[/glossary-definition

culture: blueprint or guideline shared by a group of people that specifies how to live; passed down from generation to generation; learned from parents and others

cycle of poverty: when families with ow social mobility become trapped in poverty for generations

discontinuous development: idea that development takes place in unique stages and occurs at specific times or ages

life chances: someone's access to marketplace resources

lifespan perspective: an approach to studying development which emphasizes that development is lifelong, multidimensional, multidirectional, plastic, contextual, and multidisciplinary

nature: the influences of biology and genetics on behavior

non-normative influences: unpredictable influences not tied to a certain developmental time, personally or historical period

normative age-graded influences: biological and environmental factors that have a strong correlation with chronological age

normative history-graded influences: influences associated with a specific time period that define the broader bio-cultural context in which an individual develops

nurture: environmental, social, and cultural influences of behavior

poverty: the state of not having access to material resources, wealth, or income

social mobility: the ability to change one's economic status in a society

socioeconomic status: a way to identify families and households based on their shared levels of education, income, and occupation

PSYCHOLOGICAL RESEARCH

Learning outcomes

- Explain how the scientific method is used in researching development
- Compare various types and objectives of developmental research
- Describe methods for collecting research data (including observation, survey, case study, content analysis, and secondary content analysis)
- Explain correlational research
- Describe the value of experimental research
- Compare the advantages and disadvantages of developmental research designs (cross-sectional, longitudinal, and sequential)
- Describe challenges associated with conducting research in lifespan development

How do we know what changes and stays the same (and when and why) in development? We rely on research that utilizes the scientific method so that we can have confidence in the findings. How data are collected and analyzed vary by the type of information sought. The design of the study will affect the data and the conclusions that can be drawn from them about actual age changes.

Research in Development

An essential part of learning any science is having a basic knowledge of the techniques used in gathering information. The hallmark of scientific investigation is that of following a set of procedures designed to keep questioning or skepticism alive while describing, explaining, or testing any phenomenon. Not long ago, a friend said to me that he did not trust academicians or researchers because they always seem to change their story. That, however, is precisely what science is all about; it involves continuously renewing our understanding of the subjects in question and an ongoing investigation of how and why events occur. Science is a vehicle for going on a never-ending journey. In the area of development, we have seen changes in recommendations for nutrition, in explanations of psychological states as people age, and in parenting advice. So think of learning about human development as a lifelong endeavor.

Personal Knowledge

How do we know what we know? Take a moment to identify two things that you know about adolescence. Now, how do you know? Chances are you know these things based on your own history (experiential reality), what others have told you, or cultural ideas (agreement reality) (Seccombe and Warner, 2004). There are several problems with personal inquiry, or drawing conclusions based on our personal experiences. Read the following sentence aloud:

Paris in the
the spring

Are you sure that is what it said? Read it again.

If you read it differently the second time (adding the second

"the"), you just experienced one of the problems with relying on personal inquiry; that is, the tendency to see what we believe. Our assumptions very often guide our perceptions; consequently, when we believe something, we tend to see it even if it is not there. Have you heard the saying, "seeing is believing"? Well, the truth is just the opposite: believing is seeing. This problem may just be a result of cognitive 'blinders,' or it may be part of a more conscious attempt to support our own views. Confirmation bias is the tendency to look for evidence that we are right, and in so doing, we ignore contradictory evidence.

Philosopher Karl Popper suggested that the distinction between that which is scientific and that which is unscientific is that science is falsifiable; scientific inquiry involves attempts to reject or refute a theory or set of assumptions (Thornton, 2005). A theory that cannot be falsified is not scientific. And much of what we do in personal inquiry involves drawing conclusions based on what we have personally experienced or validating our own experience by discussing what we think is true with others who share the same views.

Science offers a more systematic way to make comparisons and guard against bias. One technique used to avoid sampling bias is to select participants for a study in a random way. This means using a technique to ensure that all members have an equal chance of being selected. Simple random sampling may involve using a set of random numbers as a guide in determining who is to be selected. For example, if we have a list of 400 people and wish to randomly select a smaller group or sample to be studied, we use a list of random numbers and select the case that corresponds with that number (Case 39, 3, 217, etc.). This is preferable to asking only those individuals with whom we are familiar to participate in a study; if we conveniently chose only people we know, we know nothing about those who had no opportunity to be selected. There are many more elaborate techniques that can be used to obtain samples that represent the composition of the population we are studying. But even though a randomly selected representative

sample is preferable, it is not always used because of costs and other limitations. As a consumer of research, however, you should know how the sample was obtained and keep this in mind when interpreting results. It is possible that what was found was limited to that sample or similar individuals and not generalizable to everyone else.

The Scientific Method

The general scientific approach has three fundamental features (Stanovich, 2010). The first is *systematic empiricism*. Empiricism refers to learning based on observation, and scientists learn about the natural world systematically, by carefully planning, making, recording, and analyzing observations of it. The second feature of the scientific approach is that it is concerned with *empirical questions*. These are questions about the way the world actually is and, therefore, can be answered by systematically observing it. The third feature is that it creates *public knowledge*. After asking empirical questions, making observations, and drawing their conclusions, scientists publish their work. This usually means writing an article for publication in a professional journal, in which they put their research question in the context of previous research, describe in detail the methods they used to answer their question, and clearly present their results and conclusions. Publication is an essential feature of science for two reasons. One is that science is a social process—a large-scale collaboration among many researchers distributed across both time and space. Our current scientific knowledge of most topics is based on many different studies conducted by many different researchers who have shared their work with each other over the years. The second is that publication allows science to be self-correcting. Individual scientists understand that despite their best efforts, their methods can be flawed, and their conclusions incorrect. Publication allows others in the scientific community to detect and correct these errors so that, over time, scientific knowledge increasingly reflects the way the world actually is.

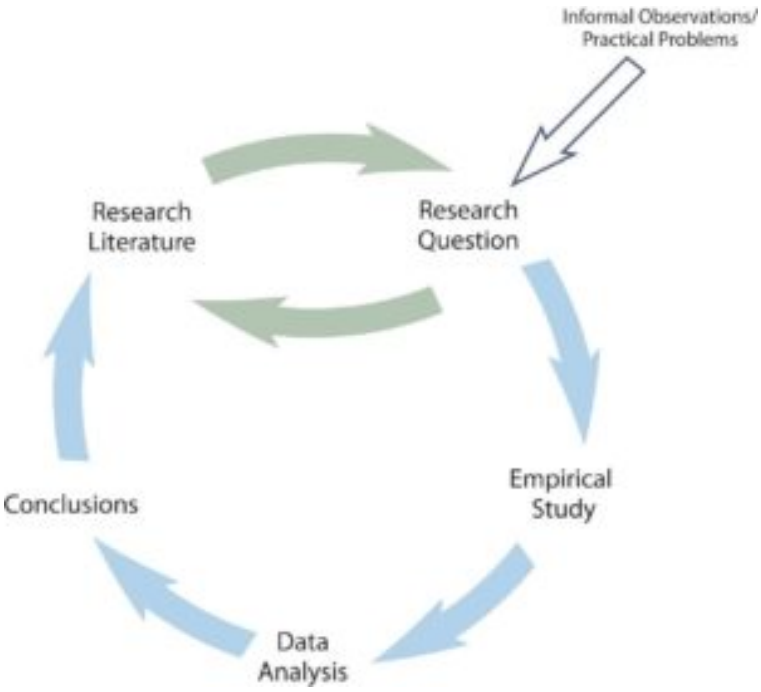


Figure 1. Simple model of scientific research in psychology.

Figure 1 is a simple model of scientific research in psychology and presents a more specific model of scientific research in psychology. The researcher (who more often than not is really a small group of researchers) formulates a research question, conducts a study designed to answer the question, analyzes the resulting data, draws conclusions about the answer to the question, and publishes the results so that they become part of the research literature. Because the research literature is one of the primary sources of new research questions, this process can be thought of as a cycle. New research leads to new questions, which leads to new research, and so on. The model also indicates that research questions can originate outside of this cycle, either with informal observations or with practical problems that need to be solved. But

even in these cases, the researcher would start by checking the research literature to see if the question had already been answered and to refine it based on what previous research had already found.



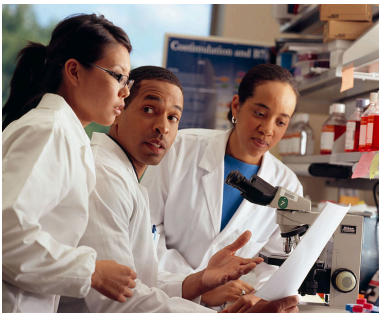
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Video 1. The Scientific Method explains the basic steps taken for most scientific inquiry.



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Quantitative and Qualitative Approaches to Research



If you think about the vast array of fields and topics covered in psychology, you understand that in order to do psychological research, there must be a diverse set of ways to gather data and perform experiments. For example, a biological psychologist might work predominately in a lab setting or alongside a neurologist. A social scientist may set up situational experiments, a health psychologist may administer surveys, and a developmental psychologist may make observations in a classroom. In this section, you'll learn about the various types of research methods that psychologists employ to learn about human behavior.

When designing a study, typically, researchers choose a quantitative or qualitative research design. In some cases, a mixed-method approach may be appropriate. Which approach used will develop on the research question and the type of information sought. Quantitative methods may be better for understanding what is happening, while qualitative methods may be better for understanding the hows and why of a phenomenon.

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Video 1. *Types of Research* explains the difference between qualitative and quantitative research. A closed-captioned version of this video is available here.

Quantitative Research

Quantitative research typically starts with a focused research question or hypothesis, collects a small amount of data from each of a large number of individuals, describes the resulting data using statistical techniques, and draws general conclusions about some large population. The strength of quantitative research is its ability to provide precise answers to specific research questions and to draw general conclusions about human behavior; however, it is not nearly as good at *generating* novel and interesting research questions. Likewise, while quantitative research is good at drawing general conclusions about human behavior, it is not nearly as good at providing detailed descriptions of the behavior of particular groups in particular situations. And it is not very good at all at communicating what it is actually like to be a member of a particular group in a particular situation. But the relative weaknesses of quantitative research are the relative strengths of qualitative research.

Qualitative Research

Although this is by far the most common approach to conducting empirical research in psychology, there is a vital alternative called **qualitative research**. Qualitative research can help researchers to generate new and interesting research questions and hypotheses. Qualitative researchers generally begin with a less focused research question, collect large amounts of relatively "unfiltered" data from a relatively small number of individuals, and describe their data using nonstatistical techniques. They are usually less concerned with drawing general conclusions about human behavior than with understanding in detail the *experience* of their research participants. Qualitative research can also provide rich and detailed descriptions of human behavior in the real-world contexts in which it occurs. Similarly, qualitative research can convey a sense of what it is actually like to be a member of a particular group or in a particular situation—what qualitative researchers often refer to as the 'lived experience' of the research participants.

Mixed-Methods

Given their differences, it may come as no surprise that quantitative and qualitative research do not coexist in complete harmony. Some quantitative researchers criticize that qualitative methods lack objectivity, are challenging to evaluate, and do not allow generalization to other people or situations. At the same time, some qualitative researchers criticize that quantitative methods overlook the richness of behavior and experience, and instead answer simple questions about easily quantifiable variables. However, many researchers from both camps now agree that the two approaches can and should be combined into what has come to be called mixed-methods research (Todd, Nerlich, McKeown, & Clarke, 2004). One

approach to combining quantitative and qualitative research is to use qualitative research for hypothesis generation and quantitative research for hypothesis testing. A second approach to combining quantitative and qualitative research is referred to as triangulation. The idea is to use both quantitative and qualitative methods simultaneously to study the same general questions and to compare the results. If the results of the quantitative and qualitative methods converge on the same general conclusion, they reinforce and enrich each other. If the results diverge, then they suggest an interesting new question: Why do the results diverge, and how can they be reconciled?



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Video 2. *What are Qualitative and Quantitative Variables* explains the difference between quantitative and qualitative variables that may be used in research.



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Becoming Familiar with Research

An excellent way to become more familiar with these research approaches, both quantitative and qualitative, is to look at journal articles, which are written in sections that follow these steps in the scientific process. Most psychological articles and many papers in the social sciences follow the writing guidelines and format dictated by the American Psychological Association (APA). In general, the structure follows: abstract (summary of the article), introduction or literature review, methods explaining how the study was conducted, results of the study, discussion and interpretation of findings, and references.

The aftermath of teenage suicide: a qualitative study of the psychosocial consequences for the supervising family

Per Lindqvist and his colleagues (2008), wanted to learn how the families of teenage suicide victims cope with their loss. They did not have a specific research question or hypothesis, such as, what percentage of family members join suicide support groups? Instead, they wanted to understand the variety of reactions that families had, with a focus on what it is like from *their* perspectives. To do this, they interviewed the families of 10 teenage suicide victims in their homes in rural Sweden. The interviews were relatively unstructured, beginning with a general request for the families to talk about the victim and ending with an invitation to talk about anything else that they wanted to tell the interviewer. One of the most important themes that

emerged from these interviews was that even as life returned to "normal," the families continued to struggle with the question of why their loved one committed suicide. This struggle appeared to be especially difficult for families in which the suicide was most unexpected. This relationship can now be explored using quantitative research. But it is unclear whether this question would have arisen at all without the researchers sitting down with the families and listening to what they themselves wanted to say about their experience.

Descriptive Research

There are many research methods available to psychologists in their efforts to understand, describe, and explain behavior. Some methods rely on observational techniques. Other approaches involve interactions between the researcher and the individuals who are being studied—ranging from a series of simple questions to extensive, in-depth interviews—to well-controlled experiments. The main categories of psychological research are descriptive, correlational, and experimental research. Each of these research methods has unique strengths and weaknesses, and each method may only be appropriate for certain types of research questions.



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Research studies that do not test specific relationships between variables are called **descriptive studies**. For this method, the research question or hypothesis can be about a single variable (e.g., How accurate are people's first impressions?) or can be a broad and exploratory question (e.g., What is it like to be a working mother diagnosed with depression?). The variable of the study is measured and reported without any further relationship analysis. A researcher might choose this method if they only needed to report information, such as a tally, an average, or a list of responses. Descriptive research can answer interesting and important questions, but what it cannot do is answer questions about relationships between variables.

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Video 1. *Descriptive Research Design* provides explanation and examples for quantitative descriptive research. A closed-captioned version of this video is available here.

Descriptive research is distinct from **correlational research**, in which researchers formally test whether a relationship exists between two or more variables. **Experimental research** goes a step further beyond descriptive and correlational research and randomly assigns people to different conditions, using hypothesis testing to make inferences about causal relationships between variables. We will discuss each of these methods more in-depth later.

Table 1. Comparison of research design methods

Research design	Goal	Advantages	Disadvantages
Descriptive	To create a snapshot of the current state of affairs	Provides a relatively complete picture of what is occurring at a given time. Allows the development of questions for further study.	Does not assess relationships among variables. May be unethical if participants do not know they are being observed.
Correlational	To assess the relationships between and among two or more variables	Allows testing of expected relationships between and among variables and the making of predictions. Can assess these relationships in everyday life events.	Cannot be used to draw inferences about the causal relationships between and among the variables.
Experimental	To assess the causal impact of one or more experimental manipulations on a dependent variable	Allows drawing of conclusions about the causal relationships among variables.	Cannot experimentally manipulate many important variables. May be expensive and time-consuming.

Source: Stangor, 2011.



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Methods of Data Collection

Regardless of the method of research, data collection will be necessary. The method of data collection selected will primarily depend on the type of information the researcher needs for their study; however, other factors, such as time, resources, and even ethical considerations can influence the selection of a data collection method. All of these factors need to be considered when selecting a data collection method because each method has unique strengths and weaknesses. We will discuss the uses and assessment of the most common data collection methods: observation, surveys, archival data, and tests.

Observation

The observational method involves the watching and recording of a specific behavior of participants. In general, observational studies have the strength of allowing the researcher to see for themselves how people behave. However, observations may require more time and manpower than other data collection methods, often resulting in smaller samples of participants. Researchers may spend significant time waiting to observe a behavior, or the behavior may never occur during observation. It is important to remember that people tend to change their behavior when they know they are being watched (known as the **Hawthorne effect**).

Observations may be done in a naturalist setting to reduce the likelihood of the Hawthorne effect. During naturalistic observations, the participants are in their natural environment and are usually unaware that they are being observed. For example, observing students participating in their class would be a naturalist observation. The downside of a naturalistic setting is that the research doesn't have control over the environment. Imagine that

the researcher goes to the classroom to observe those students, and there is a substitute teacher. The change in instructor that day could impact student behavior and skew the data.

If controlling the environment is a concern, a laboratory setting may be a better choice. In the laboratory environment, the researcher can manage confounding factors or distractions that might impact the participants' behavior. Of course, there are expenses associated with maintaining a laboratory setting, increasing the cost of the study, that would not be associated with naturalist observations. And, again, the Hawthorne effect may impact behavior.

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Surveys



Surveys are familiar to most people because they are so widely used. This method enhances accessibility to subjects because they can be conducted in person, over the phone, through the mail, or online, and are commonly used by researchers to gather information on many variables in a relatively short period of time.

Most surveys involve asking a standard set of questions to a group of participants. In a highly structured survey, subjects are forced to choose from a response set such as "strongly disagree, disagree, undecided, agree, strongly agree"; or "0, 1-5, 6-10, etc." One of the benefits of having forced-choice items is that each response is coded so that the results can be quickly entered and analyzed using statistical software. While this type of survey typically yields surface information on a wide variety of factors, it may not allow for an in-depth understanding of human behavior.

Of course, surveys can be designed in a number of ways. Some surveys ask open-ended questions, allowing each participant to devise their own response, allowing for a variety of answers. This variety may provide deeper insight into the subject than forced-choice questions, but makes comparing answers challenging. Imagine a survey question that asked participants to report how they are feeling today. If there were 100 participants, there could be 100 different answers, which is more challenging and takes more time to code and analyze.

Surveys are useful in examining stated values, attitudes, opinions, and reporting on practices. However, they are based on self-report, and this can limit accuracy. For a variety of reasons, people may not provide honest or complete answers. Participants may be concerned with projecting a particular image through their responses, they may be uncomfortable answering the questions, inaccurately assess their behavior, or they may lack awareness of the behavior being assessed. So, while surveys can provide a lot of information for many participants quickly and easily, self-reporting may not be as accurate as other methods.



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Content Analysis of Archival data

Content analysis involves looking at media such as old texts, pictures, commercials, lyrics, or other materials to explore patterns or themes in culture. An example of content analysis is the classic history of childhood by Aries (1962) called "Centuries of Childhood" or the analysis of television commercials for sexual or violent content or for ageism. Passages in text or television programs can be randomly selected for analysis as well. Again, one advantage of analyzing work such as this is that the researcher does not have to go through the time and expense of finding respondents, but the researcher cannot know how accurately the media reflects the actions and sentiments of the population.

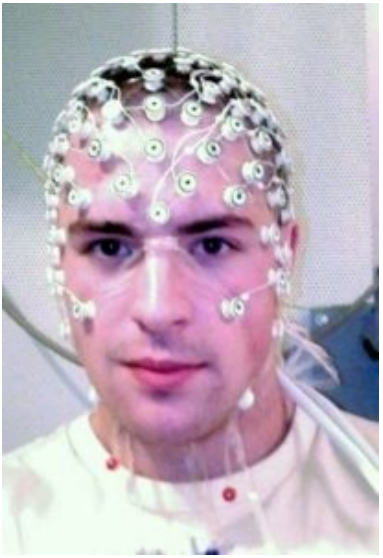
Secondary content analysis, or archival research, involves analyzing information that has already been collected or examining documents or media to uncover attitudes, practices, or preferences. There are a number of data sets available to those who wish to conduct this type of research. The researcher conducting secondary analysis does not have to recruit subjects but does need to know the quality of the information collected in the original study. And unfortunately, the researcher is limited to the questions asked and data collected originally.



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Tests



Many variables studied by psychologists—perhaps the majority—are not so straightforward or simple to measure. These kinds of variables are called constructs and include personality traits, emotional states, attitudes, and abilities. Psychological constructs cannot be observed directly. One reason is that they often represent *tendencies* to think, feel, or act in certain ways. For example, to say that a particular college student is highly extroverted does not necessarily mean that she is behaving in an extroverted way right now. Another reason psychological constructs cannot be observed directly is that they often involve internal processes, like thoughts or feelings. For these psychological constructs, we need another means for collecting data. Tests will serve this purpose.

A good test will aid researchers in assessing a particular

psychological construct. What is a good test? Researchers want a test that is standardized, reliable, and valid. A standardized test is one that is administered, scored, and analyzed in the same way for each participant. This minimizes differences in test scores due to confounding factors, such as variability in the testing environment or scoring process, and assures that scores are comparable. Reliability refers to the consistency of a measure. Researchers consider three types of consistency: over time (test-retest reliability), across items (internal consistency), and across different researchers (interrater reliability). Validity is the extent to which the scores from a measure represent the variable they are intended to. When a measure has good test-retest reliability and internal consistency, researchers should be more confident that the scores represent what they are supposed to.

There are various types of tests used in psychological research. Self-report measures are those in which participants report on their own thoughts, feelings, and actions, such as the Rosenberg Self-Esteem Scale or the Big Five Personality Test. Some tests measure performance, ability, aptitude, or skill, like the Stanford-Binet Intelligence Scale or the SATs.There are also tests that measure physiological states, including electrical activity or blood flow in the brain.



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Video 1. *Methods of Data Collection* explains various means for gathering data for quantitative and qualitative research. A closed-captioned version of this video is available here.

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Reliability and Validity

Reliability and **validity** are two important considerations that must be made with any type of data collection. Reliability refers to the ability to consistently produce a given result. In the context of psychological research, this would mean that any instruments or tools used to collect data do so in consistent, reproducible ways. Unfortunately, being consistent in measurement does not necessarily mean that you have measured something correctly. To illustrate this concept, consider a kitchen scale that would be used to measure the weight of cereal that you eat in the morning. If the scale is not properly calibrated, it may consistently under- or overestimate the amount of cereal that's being measured. While the scale is highly reliable in producing consistent results (e.g., the same amount of cereal poured onto the scale produces the same reading each time), those results are incorrect. This is where validity comes into play. Validity refers to the extent to which a given instrument or tool accurately measures what it's supposed to measure. While any valid measure is by necessity reliable, the reverse is not necessarily true. Researchers strive to use instruments that are both highly reliable and valid.
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Everyday Connection: How Valid Is the SAT?

Standardized tests like the SAT are supposed to measure an individual's aptitude for a college education, but how reliable and valid are such tests? Research conducted by the College Board suggests that scores on the SAT have high predictive validity for first-year college students' GPA (Kobrin, Patterson, Shaw, Mattern, & Barbuti, 2008). In this context, predictive validity refers to the test's ability to effectively predict the GPA of college freshmen. Given that many institutions of higher education require the SAT for admission, this high degree of predictive validity might be comforting.

However, the emphasis placed on SAT scores in college admissions has generated some controversy on a number of fronts. For one, some researchers assert that the SAT is a biased test that places minority students at a disadvantage and unfairly reduces the likelihood of being admitted into a college (Santelices & Wilson, 2010). Additionally, some research has suggested that the predictive validity of the SAT is grossly exaggerated in how well it is able to predict the GPA of first-year college students. In fact, it has been suggested that the SAT's predictive validity may be overestimated by as much as 150% (Rothstein, 2004). Many institutions of higher education are beginning to consider de-emphasizing the significance of SAT scores in making admission decisions (Rimer, 2008).

In 2014, College Board president David Coleman expressed his awareness of these problems, recognizing that college success is more accurately predicted by high

school grades than by SAT scores. To address these concerns, he has called for significant changes to the SAT exam (Lewin, 2014).

Analyzing Data: Correlational and Experimental Research

Did you know that as sales of ice cream increase, so does the overall rate of crime? Is it possible that indulging in your favorite flavor of ice cream could send you on a crime spree? Or, after committing a crime, do you think you might decide to treat yourself to a cone? There is no question that a relationship exists between ice cream and crime (e.g., Harper, 2013), but does one thing actually caused the other to occur.

It is much more likely that both ice cream sales and crime rates are related to the temperature outside. When the temperature is warm, there are lots of people out of their houses, interacting with each other, getting annoyed with one another, and sometimes committing crimes. Also, when it is warm outside, we are more likely to seek a refreshing treat like ice cream. How do we determine if there is indeed a relationship between two things? And when there is a relationship, how can we discern whether it is attributable to coincidence or causation? We do this through statistical analysis of the data. Which analysis we use will depend on several conditions outlined next.

Introduction to Statistical Thinking



***Figure 1**. People around the world differ in their preferences for drinking coffee versus drinking tea. Would the results of the coffee study be the same in Canada as in China? [Image: Duncan, https://goo.gl/vbMyTm, CC BY-NC 2.0, https://goo.gl/l8UUGY]*

Does drinking coffee actually increase your life expectancy? A recent study (Freedman, Park, Abnet, Hollenbeck, & Sinha, 2012) found that men who drank at least six cups of coffee a day had a 10% lower chance of dying (women 15% lower) than those who drank none. Does this mean you should pick up or increase your own coffee habit? Modern society has become awash in studies such as this; you can read about several such studies in the news every day. Conducting such a study well, and interpreting the results of such studies requires understanding basic ideas of **statistics**, the science of gaining insight from data. Key components to a statistical investigation are:

- Planning the study: Start by asking a testable research question and deciding how to collect data. For example, how long was the study period of the coffee study? How many people were recruited for the study, how were they recruited, and from where? How old were they? What other variables were recorded about the individuals? Were changes made to the participants' coffee habits during the course of the study?
- Examining the data: What are appropriate ways to examine the data? What graphs are relevant, and what do they reveal? What descriptive statistics can be calculated to summarize relevant aspects of the data, and what do they reveal? What patterns do you see in the data? Are there any individual observations that deviate from the overall pattern, and what do they reveal? For

example, in the coffee study, did the proportions differ when we compared the smokers to the non-smokers?
- Inferring from the data: What are valid statistical methods for drawing inferences "beyond" the data you collected? In the coffee study, is the 10%–15% reduction in risk of death something that could have happened just by chance?
- Drawing conclusions: Based on what you learned from your data, what conclusions can you draw? Who do you think these conclusions apply to? (Were the people in the coffee study older? Healthy? Living in cities?) Can you draw a **cause-and-effect** conclusion about your treatments? (Are scientists now saying that the coffee drinking is the cause of the decreased risk of death?)

Notice that the numerical analysis ("crunching numbers" on the computer) comprises only a small part of overall statistical investigation. In this section, you will see how we can answer some of these questions and what questions you should be asking about any statistical investigation you read about.



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Video 1. *Types of Statistical Studies* explains the differences between correlational and experimental research.



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Distributional Thinking

When data are collected to address a particular question, an important first step is to think of meaningful ways to organize and examine the data. Let's take a look at an example.

Example 1: Researchers investigated whether cancer pamphlets are written at an appropriate level to be read and understood by cancer patients (Short, Moriarty, & Cooley, 1995). Tests of reading ability were given to 63 patients. In addition, readability level was determined for a **sample** of 30 pamphlets, based on characteristics such as the lengths of words and sentences in the pamphlet. The results, reported in terms of grade levels, are displayed in Figure 2.

Patients' reading levels	< 3	3	4	5	6	7	8	9	10	11	12	> 12	Total
Count (number of patients)	6	4	4	3	3	2	6	5	4	7	2	17	63

Pamphlet's readability levels	6	7	8	9	10	11	12	13	14	15	16	Total
Count (number of pamphlets)	3	3	8	4	1	1	4	2	1	2	1	30

***Figure 2**. Frequency tables of patient reading levels and pamphlet readability levels.*

Testing these two variables reveal two fundamental aspects of statistical thinking:

- Data *vary*. More specifically, values of a variable (such as

reading level of a cancer patient or readability level of a cancer pamphlet) vary.
- Analyzing the pattern of variation, called the **distribution** of the variable, often reveals insights.

Addressing the research question of whether the cancer pamphlets are written at appropriate levels for the cancer patients requires comparing the two distributions. A naïve comparison might focus only on the centers of the distributions. Both medians turn out to be ninth grade, but considering only medians ignores the variability and the overall distributions of these data. A more illuminating approach is to compare the entire distributions, for example with a graph, as in Figure 3.

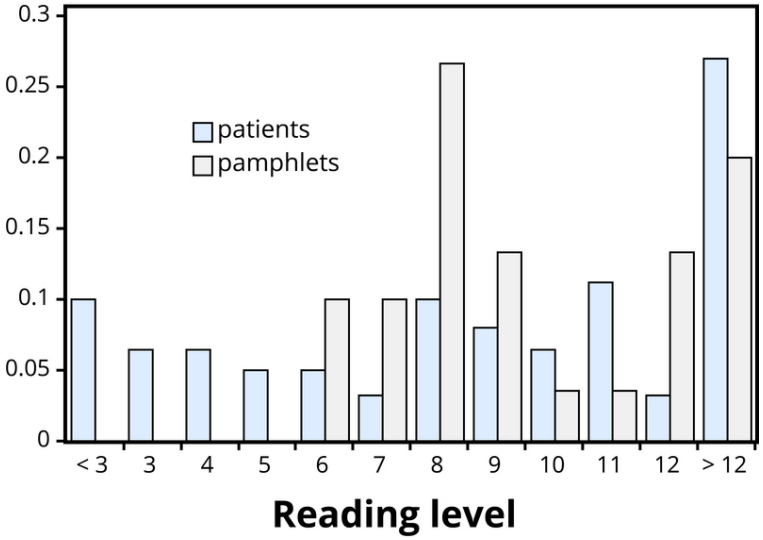


***Figure 3**. Comparison of patient reading levels and pamphlet readability levels.*

Figure 3 makes clear that the two distributions are not well aligned at all. The most glaring discrepancy is that many patients (17/63, or 27%, to be precise) have a reading level below that of the most

readable pamphlet. These patients will need help to understand the information provided in the cancer pamphlets. Notice that this conclusion follows from considering the distributions as a whole, not simply measures of center or variability, and that the graph contrasts those distributions more immediately than the frequency tables.



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Statistical Significance

Even when we find patterns in data, often there is still uncertainty in various aspects of the data. For example, there may be potential for measurement errors (even your own body temperature can fluctuate by almost 1°F over the course of the day). Or we may only have a "snapshot" of observations from a more long-term process or only a small subset of individuals from the **population** of interest. In such cases, how can we determine whether patterns we see in our small set of data is convincing evidence of a systematic phenomenon in the larger process or population? Let's take a look at another example.

Example 2: In a study reported in the November 2007 issue of *Nature*, researchers investigated whether pre-verbal infants take into account an individual's actions toward others in evaluating that individual as appealing or aversive (Hamlin, Wynn, & Bloom, 2007). In one component of the study, 10-month-old infants were shown a

"climber" character (a piece of wood with "googly" eyes glued onto it) that could not make it up a hill in two tries. Then the infants were shown two scenarios for the climber's next try, one where the climber was pushed to the top of the hill by another character ("helper"), and one where the climber was pushed back down the hill by another character ("hinderer"). The infant was alternately shown these two scenarios several times. Then the infant was presented with two pieces of wood (representing the helper and the hinderer characters) and asked to pick one to play with.

The researchers found that of the 16 infants who made a clear choice, 14 chose to play with the helper toy. One possible explanation for this clear majority result is that the helping behavior of the one toy increases the infants' likelihood of choosing that toy. But are there other possible explanations? What about the color of the toy? Well, prior to collecting the data, the researchers arranged so that each color and shape (red square and blue circle) would be seen by the same number of infants. Or maybe the infants had right-handed tendencies and so picked whichever toy was closer to their right hand?

Well, prior to collecting the data, the researchers arranged it so half the infants saw the helper toy on the right and half on the left. Or, maybe the shapes of these wooden characters (square, triangle, circle) had an effect? Perhaps, but again, the researchers controlled for this by rotating which shape was the helper toy, the hinderer toy, and the climber. When designing experiments, it is important to *control* for as many variables as might affect the responses as possible. It is beginning to appear that the researchers accounted for all the other plausible explanations. But there is one more important consideration that cannot be controlled—if we did the study again with these 16 infants, they might not make the same choices. In other words, there is some *randomness* inherent in their selection process.

P-value

Maybe each infant had no genuine preference at all, and it was simply "random luck" that led to 14 infants picking the helper toy. Although this random component cannot be controlled, we can apply a *probability model* to investigate the pattern of results that would occur in the long run if random chance were the only factor.

If the infants were equally likely to pick between the two toys, then each infant had a 50% chance of picking the helper toy. It's like each infant tossed a coin, and if it landed heads, the infant picked the helper toy. So if we tossed a coin 16 times, could it land heads 14 times? Sure, it's possible, but it turns out to be very unlikely. Getting 14 (or more) heads in 16 tosses is about as likely as tossing a coin and getting 9 heads in a row. This probability is referred to as a **p-value**. The p-value represents the likelihood that experimental results happened by chance. Within psychology, the most common standard for p-values is "p < .05". What this means is that there is less than a 5% probability that the results happened just by random chance, and therefore a 95% probability that the results reflect a meaningful pattern in human psychology. We call this **statistical significance**.



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So, in the study above, if we assume that each infant was choosing equally, then the probability that 14 or more out of 16 infants would choose the helper toy is found to be 0.0021. We have only two logical possibilities: either the infants have a genuine preference for

the helper toy, or the infants have no preference (50/50), and an outcome that would occur only 2 times in 1,000 iterations happened in this study. Because this p-value of 0.0021 is quite small, we conclude that the study provides very strong evidence that these infants have a genuine preference for the helper toy.

If we compare the p-value to some cut-off value, like 0.05, we see that the p=value is smaller. Because the p-value is smaller than that cut-off value, then we reject the hypothesis that only random chance was at play here. In this case, these researchers would conclude that *significantly* more than half of the infants in the study chose the helper toy, giving strong evidence of a genuine preference for the toy with the helping behavior.



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Generalizability



***Figure 4**. Generalizability is an important research consideration: The results of studies with widely representative samples are more likely to generalize to the population. [Image: Barnacles Budget Accommodation]*

One limitation to the study mentioned previously about the babies choosing the "helper" toy is that the conclusion only applies to the 16 infants in the study. We don't know much about how those 16 infants were selected. Suppose we want to select a subset of individuals (a **sample**) from a much larger group of individuals (the **population**) in such a way that conclusions from the sample can be **generalized** to the larger population. This is the question faced by pollsters every day.

Example 3: The General Social Survey (GSS) is a survey on societal trends conducted every other year in the United States. Based on a sample of about 2,000 adult Americans, researchers make claims about what percentage of the U.S. population consider themselves to be "liberal," what percentage consider themselves "happy," what percentage feel "rushed" in their daily lives, and many other issues. The key to making these claims about the larger population of all American adults lies in how the sample is selected. The goal is to select a sample that is representative of the population, and a common way to achieve this goal is to select a **random sample** that gives every member of the population an equal chance of being selected for the sample. In its simplest form, random sampling involves numbering every member of the population and then using a computer to randomly select the subset to be surveyed. Most polls don't operate exactly like this, but they do use probability-based sampling methods to select individuals from nationally representative panels.



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In 2004, the GSS reported that 817 of 977 respondents (or 83.6%) indicated that they always or sometimes feel rushed. This is a clear majority, but we again need to consider variation due to *random sampling*. Fortunately, we can use the same probability model we did in the previous example to investigate the probable size of this error. (Note, we can use the coin-tossing model when the actual population size is much, much larger than the sample size, as then we can still consider the probability to be the same for every individual in the sample.) This probability model predicts that the sample result will be within 3 percentage points of the population value (roughly 1 over the square root of the sample size, the **margin of error**). A statistician would conclude, with 95% confidence, that between 80.6% and 86.6% of all adult Americans in 2004 would have responded that they sometimes or always feel rushed.



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The key to the margin of error is that when we use a probability sampling method, we can make claims about how often (in the long

run, with repeated random sampling) the sample result would fall within a certain distance from the unknown population value by chance (meaning by random sampling variation) alone. Conversely, non-random samples are often suspect to bias, meaning the sampling method systematically over-represents some segments of the population and under-represents others. We also still need to consider other sources of bias, such as individuals not responding honestly. These sources of error are not measured by the margin of error.

Cause and Effect Conclusions

In many research studies, the primary question of interest concerns differences between groups. Then the question becomes how were the groups formed (e.g., selecting people who already drink coffee vs. those who don't). In some studies, the researchers actively form the groups themselves. But then we have a similar question—could any differences we observe in the groups be an artifact of that group-formation process? Or maybe the difference we observe in the groups is so large that we can discount a "fluke" in the group-formation process as a reasonable explanation for what we find?

Example 4: A psychology study investigated whether people tend to display more creativity when they are thinking about intrinsic (internal) or extrinsic (external) motivations (Ramsey & Schafer, 2002, based on a study by Amabile, 1985). The subjects were 47 people with extensive experience with creative writing. Subjects began by answering survey questions about either intrinsic motivations for writing (such as the pleasure of self-expression) or extrinsic motivations (such as public recognition). Then all subjects were instructed to write a haiku, and those poems were evaluated for creativity by a panel of judges. The researchers conjectured beforehand that subjects who were thinking about intrinsic motivations would display more creativity than subjects who were

thinking about extrinsic motivations. The creativity scores from the 47 subjects in this study are displayed in Figure 5, where higher scores indicate more creativity.

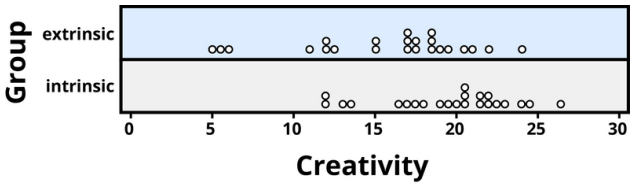


***Figure 5**. Creativity scores separated by type of motivation.*

In this example, the key question is whether the type of motivation *affects* creativity scores. In particular, do subjects who were asked about intrinsic motivations tend to have higher creativity scores than subjects who were asked about extrinsic motivations?

Figure 5 reveals that both motivation groups saw considerable variability in creativity scores, and these scores have considerable overlap between the groups. In other words, it's certainly not always the case that those with extrinsic motivations have higher creativity than those with intrinsic motivations, but there may still be a statistical *tendency* in this direction. (Psychologist Keith Stanovich (2013) refers to people's difficulties with thinking about such probabilistic tendencies as "the Achilles heel of human cognition.")

The mean creativity score is 19.88 for the intrinsic group, compared to 15.74 for the extrinsic group, which supports the researchers' conjecture. Yet comparing only the means of the two groups fails to consider the variability of creativity scores in the groups. We can measure variability with statistics using, for instance, the standard deviation: 5.25 for the extrinsic group and 4.40 for the intrinsic group. The standard deviations tell us that most of the creativity scores are within about 5 points of the mean score in each group. We see that the mean score for the intrinsic group lies within one standard deviation of the mean score for extrinsic group. So, although there is a tendency for the creativity

scores to be higher in the intrinsic group, on average, the difference is not extremely large.

We again want to consider possible explanations for this difference. The study only involved individuals with extensive creative writing experience. Although this limits the population to which we can generalize, it does not explain why the mean creativity score was a bit larger for the intrinsic group than for the extrinsic group. Maybe women tend to receive higher creativity scores? Here is where we need to focus on how the individuals were assigned to the motivation groups. If only women were in the intrinsic motivation group and only men in the extrinsic group, then this would present a problem because we wouldn't know if the intrinsic group did better because of the different type of motivation or because they were women. However, the researchers guarded against such a problem by randomly assigning the individuals to the motivation groups. Like flipping a coin, each individual was just as likely to be assigned to either type of motivation. Why is this helpful? Because this **random assignment** tends to balance out all the variables related to creativity we can think of, and even those we don't think of in advance, between the two groups. So we should have a similar male/female split between the two groups; we should have a similar age distribution between the two groups; we should have a similar distribution of educational background between the two groups; and so on. Random assignment should produce groups that are as similar as possible except for the type of motivation, which presumably eliminates all those other variables as possible explanations for the observed tendency for higher scores in the intrinsic group.

But does this always work? No, so by "luck of the draw" the groups may be a little different prior to answering the motivation survey. So then the question is, is it possible that an unlucky random assignment is responsible for the observed difference in creativity scores between the groups? In other words, suppose each individual's poem was going to get the same creativity score no matter which group they were assigned to, that the type of

motivation in no way impacted their score. Then how often would the random-assignment process alone lead to a difference in mean creativity scores as large (or larger) than 19.88 – 15.74 = 4.14 points?

We again want to apply to a probability model to approximate a **p-value**, but this time the model will be a bit different. Think of writing everyone's creativity scores on an index card, shuffling up the index cards, and then dealing out 23 to the extrinsic motivation group and 24 to the intrinsic motivation group, and finding the difference in the group means. We (better yet, the computer) can repeat this process over and over to see how often, when the scores don't change, random assignment leads to a difference in means at least as large as 4.41. Figure 6 shows the results from 1,000 such hypothetical random assignments for these scores.

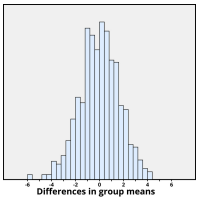


Figure 6.
Differences in group means under random assignment alone.

Only 2 of the 1,000 simulated random assignments produced a difference in group means of 4.41 or larger. In other words, the approximate p-value is 2/1000 = 0.002. This small p-value indicates that it would be very surprising for the random assignment process alone to produce such a large difference in group means. Therefore, as with Example 4, we have strong evidence that focusing on intrinsic motivations tends to increase creativity scores, as compared to thinking about extrinsic motivations.

Notice that the previous statement implies a cause-and-effect relationship between motivation and creativity score; is such a strong conclusion justified? Yes, because of the random assignment used in the study. That should have balanced out any other variables between the two groups, so now that the small p-value convinces us that the higher mean in the intrinsic group wasn't just a coincidence, the only reasonable explanation left is the difference in the type of motivation. Can we generalize this conclusion to everyone? Not necessarily—we could cautiously generalize this conclusion to individuals with extensive experience in creative

writing similar to the individuals in this study, but we would still want to know more about how these individuals were selected to participate.

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Conclusion



***Figure 7**. Researchers employ the scientific method that involves a great deal of statistical thinking: generate a hypothesis –> design a study to test that hypothesis –> conduct the study –> analyze the data –> report the results. [Image: widdowquinn]*

Statistical thinking involves the careful design of a study to collect meaningful data to answer a focused research question, detailed analysis of patterns in the data, and drawing conclusions that go beyond the observed data. Random sampling is paramount to generalizing results from our sample to a larger population, and random assignment is key to drawing cause-and-effect conclusions. With both kinds of randomness, probability models help us assess how much random variation we can expect in our results, in order to determine whether our results could happen by chance alone and to estimate a margin of error.

So where does this leave us with regard to the coffee study mentioned previously (the Freedman, Park, Abnet, Hollenbeck, & Sinha, 2012 found that men who drank at least six cups of coffee a day had a 10% lower chance of dying (women 15% lower) than those who drank none)? We can answer many of the questions:

- This was a 14-year study conducted by researchers at the National Cancer Institute.
- The results were published in the June issue of the *New England Journal of Medicine*, a respected, peer-reviewed journal.
- The study reviewed coffee habits of more than 402,000 people ages 50 to 71 from six states and two metropolitan areas. Those with cancer, heart disease, and stroke were excluded at the start of the study. Coffee consumption was assessed once at the start of the study.
- About 52,000 people died during the course of the study.
- People who drank between two and five cups of coffee daily showed a lower risk as well, but the amount of reduction increased for those drinking six or more cups.
- The sample sizes were fairly large and so the p-values are quite small, even though percent reduction in risk was not extremely large (dropping from a 12% chance to about 10%–11%).
- Whether coffee was caffeinated or decaffeinated did not appear to affect the results.
- This was an observational study, so no cause-and-effect conclusions can be drawn between coffee drinking and increased longevity, contrary to the impression conveyed by many news headlines about this study. In particular, it's possible that those with chronic diseases don't tend to drink coffee.

This study needs to be reviewed in the larger context of similar studies and consistency of results across studies, with the constant caution that this was not a randomized experiment. Whereas a

statistical analysis can still "adjust" for other potential confounding variables, we are not yet convinced that researchers have identified them all or completely isolated why this decrease in death risk is evident. Researchers can now take the findings of this study and develop more focused studies that address new questions.

Learn More

Explore these outside resources to learn more about applied statistics:

- Video about p-values: P-Value Extravaganza
- Interactive web applets for teaching and learning statistics
- Inter-university Consortium for Political and Social Research where you can find and analyze data.
- The Consortium for the Advancement of Undergraduate Statistics

Correlational Research

Correlation means that there is a relationship between two or more variables (such as ice cream consumption and crime), but this relationship does not necessarily imply cause and effect. When two variables are correlated, it simply means that as one variable changes, so does the other. We can measure correlation by calculating a statistic known as a correlation coefficient. A **correlation coefficient** is a number from -1 to +1 that indicates the strength and direction of the relationship between variables. The correlation coefficient is usually represented by the letter *r*.

The number portion of the correlation coefficient indicates the strength of the relationship. The closer the number is to 1 (be it negative or positive), the more strongly related the variables are, and the more predictable changes in one variable will be as the other variable changes. The closer the number is to zero, the weaker the relationship and the less predictable the relationship between the variables becomes. For instance, a correlation coefficient of 0.9 indicates a far stronger relationship than a correlation coefficient of 0.3. If the variables are not related to one another at all, the correlation coefficient is 0. The example above about ice cream and crime is an example of two variables that we might expect to have no relationship to each other.



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The sign—positive or negative—of the correlation coefficient

indicates the direction of the relationship (Figure 2.7.1). A **positive correlation** means that the variables move in the same direction. Put another way, it means that as one variable increases so does the other, and conversely, when one variable decreases so does the other. A **negative correlation** means that the variables move in opposite directions. If two variables are negatively correlated, a decrease in one variable is associated with an increase in the other and vice versa.

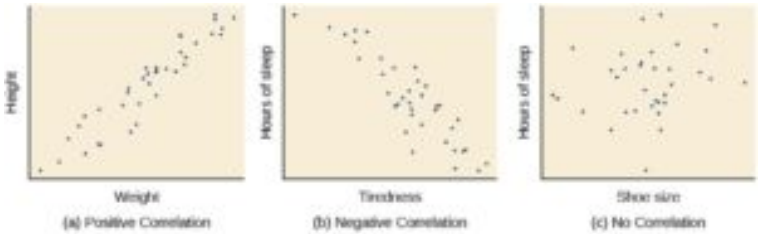


Figure 1. Scatterplots are a graphical view of the strength and direction of correlations. The stronger the correlation, the closer the data points are to a straight line. In these examples, we see that there is (a) a positive correlation between weight and height, (b) a negative correlation between tiredness and hours of sleep, and (c) no correlation between shoe size and hours of sleep.

The example of ice cream and crime rates is a positive correlation because both variables increase when temperatures are warmer. Other examples of positive correlations are the relationship between an individual's height and weight or the relationship between a person's age and number of wrinkles. One might expect a negative correlation to exist between someone's tiredness during the day and the number of hours they slept the previous night: the amount of sleep decreases as the feelings of tiredness increase. In a real-world example of negative correlation, student researchers at the University of Minnesota found a weak negative correlation (r = -0.29) between the average number of days per week that students got fewer than 5 hours of sleep and their GPA (Lowry, Dean, &

Manders, 2010). Keep in mind that a negative correlation is not the same as no correlation. For example, we would probably find no correlation between hours of sleep and shoe size.



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Video 1. *Correlational Research Design* provides explanation and examples for correlational research. A closed-captioned version of this video is available here.

Exercises

Manipulate this interactive scatterplot to practice your understanding of positive and negative correlations.



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As mentioned earlier, correlations have predictive value. Imagine

that you are on the admissions committee of a major university. You are faced with a massive number of applications, but you are able to accommodate only a small percentage of the applicant pool. How might you decide who should be admitted? You might try to correlate your current students' college GPA with their scores on standardized tests like the SAT or ACT. By observing which correlations were strongest for your current students, you could use this information to predict the relative success of those students who have applied for admission into the university.

Correlation Does Not Indicate Causation

Correlational research is useful because it allows us to discover the strength and direction of relationships that exist between two variables. However, correlation is limited because establishing the existence of a relationship tells us little about **cause and effect**. While variables are sometimes correlated because one does cause the other, it could also be that some other factor, a **confounding variable**, is actually causing the systematic movement in our variables of interest. In the ice cream/crime rate example mentioned earlier, temperature is a confounding variable that could account for the relationship between the two variables.

Even when we cannot point to clear confounding variables, we should not assume that a correlation between two variables implies that one variable causes changes in another. This can be frustrating when a cause-and-effect relationship seems clear and intuitive. Think back to our discussion of the research done by the American Cancer Society and how their research projects were some of the first demonstrations of the link between smoking and cancer. It seems reasonable to assume that smoking causes cancer, but if we were limited to correlational research, we would be overstepping our bounds by making this assumption.

Unfortunately, people mistakenly make claims of causation as a

function of correlations all the time. Such claims are especially common in advertisements and news stories. For example, recent research found that people who eat cereal on a regular basis achieve healthier weights than those who rarely eat cereal (Frantzen, Treviño, Echon, Garcia-Dominic, & DiMarco, 2013; Barton et al., 2005). Guess how the cereal companies report this finding. Does eating cereal really cause an individual to maintain a healthy weight, or are there other possible explanations, such as, someone at a healthy weight is more likely to regularly eat a healthy breakfast than someone who is obese or someone who avoids meals in an attempt to diet? While correlational research is invaluable in identifying relationships among variables, a significant limitation is the inability to establish causality. Psychologists want to make statements about cause and effect, but the only way to do that is to conduct an experiment to answer a research question. The next section describes how scientific experiments incorporate methods that eliminate or control for alternative explanations, which allow researchers to explore how changes in one variable cause changes in another variable.



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Video 2. *Correlation and Causality* provides explanation for why correlation does not imply causality.



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Illusory Correlations

The temptation to make erroneous cause-and-effect statements based on correlational research is not the only way we tend to misinterpret data. We also tend to make the mistake of illusory correlations, especially with unsystematic observations. **Illusory correlations**, or false correlations, occur when people believe that relationships exist between two things when no such relationship exists. One well-known illusory correlation is the supposed effect that the moon's phases have on human behavior. Many people passionately assert that human behavior is affected by the phase of the moon, and specifically, that people act strangely when the moon is full (Figure 2).



***Figure 2**. Many people believe that a full moon makes people behave oddly. (credit: Cory Zanker)*

There is no denying that the moon exerts a powerful influence on our planet. The ebb and flow of the ocean's tides are tightly tied to the gravitational forces of the moon. Many people believe, therefore, that it is logical that we are affected by the moon as well. After all, our bodies are

largely made up of water. A meta-analysis of nearly 40 studies consistently demonstrated, however, that the relationship between the moon and our behavior does not exist (Rotton & Kelly, 1985). While we may pay more attention to odd behavior during the full phase of the moon, the rates of odd behavior remain constant throughout the lunar cycle. Why are we so apt to believe in illusory correlations like this? Often we read or hear about them and simply accept the information as valid. Or, we have a hunch about how something works and then look for evidence to support that hunch, ignoring evidence that would tell us our hunch is false; this is known as **confirmation bias**. Other times, we find illusory correlations based on the information that comes most easily to mind, even if that information is severely limited. And while we may feel confident that we can use these relationships to better understand and predict the world around us, illusory correlations can have significant drawbacks. For example, research suggests that illusory correlations—in which certain behaviors are inaccurately attributed to certain groups—are involved in the formation of prejudicial attitudes that can ultimately lead to discriminatory behavior (Fiedler, 2004).

Experimental Research

As you've learned, the only way to establish that there is a cause-and-effect relationship between two variables is to conduct a scientific experiment. Experiment has a different meaning in the scientific context than in everyday life. In everyday conversation, we often use it to describe trying something for the first time, such as experimenting with a new hairstyle or new food. However, in the scientific context, an experiment has precise requirements for design and implementation.



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Video 1. *Experimental Research Design* provides explanation and examples for correlational research. A closed-captioned version of this video is available here.

The Experimental Hypothesis

In order to conduct an experiment, a researcher must have a specific hypothesis to be tested. As you've learned, hypotheses can be formulated either through direct observation of the real world or after careful review of previous research. For example, if you think that children should not be allowed to watch violent programming on television because doing so would cause them to behave more

violently, then you have basically formulated a hypothesis—namely, that watching violent television programs causes children to behave more violently. How might you have arrived at this particular hypothesis? You may have younger relatives who watch cartoons featuring characters using martial arts to save the world from evildoers, with an impressive array of punching, kicking, and defensive postures. You notice that after watching these programs for a while, your young relatives mimic the fighting behavior of the characters portrayed in the cartoon. Seeing behavior like this right after a child watches violent television programming might lead you to hypothesize that viewing violent television programming leads to an increase in the display of violent behaviors. These sorts of personal observations are what often lead us to formulate a specific hypothesis, but we cannot use limited personal observations and anecdotal evidence to test our hypothesis rigorously. Instead, to find out if real-world data supports our hypothesis, we have to conduct an experiment.

Designing an Experiment

The most basic experimental design involves two groups: the experimental group and the control group. The two groups are designed to be the same except for one difference— experimental manipulation. The **experimental group** gets the experimental manipulation—that is, the treatment or variable being tested (in this case, violent TV images)—and the **control group** does not. Since experimental manipulation is the only difference between the experimental and control groups, we can be sure that any differences between the two are due to experimental manipulation rather than chance.

In our example of how violent television programming might affect violent behavior in children, we have the experimental group view violent television programming for a specified time and then

measure their violent behavior. We measure the violent behavior in our control group after they watch nonviolent television programming for the same amount of time. It is important for the control group to be treated similarly to the experimental group, with the exception that the control group does not receive the experimental manipulation. Therefore, we have the control group watch non-violent television programming for the same amount of time as the experimental group.

We also need to define precisely, or operationalize, what is considered violent and nonviolent. An **operational definition** is a description of how we will measure our variables, and it is important in allowing others to understand exactly how and what a researcher measures in a particular experiment. In operationalizing violent behavior, we might choose to count only physical acts like kicking or punching as instances of this behavior, or we also may choose to include angry verbal exchanges. Whatever we determine, it is important that we operationalize violent behavior in such a way that anyone who hears about our study for the first time knows exactly what we mean by violence. This aids peoples' ability to interpret our data as well as their capacity to repeat our experiment should they choose to do so.

Once we have operationalized what is considered violent television programming and what is considered violent behavior from our experiment participants, we need to establish how we will run our experiment. In this case, we might have participants watch a 30-minute television program (either violent or nonviolent, depending on their group membership) before sending them out to a playground for an hour where their behavior is observed and the number and type of violent acts are recorded.



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Ideally, the people who observe and record the children's behavior are unaware of who was assigned to the experimental or control group, in order to control for experimenter bias. **Experimenter bias** refers to the possibility that a researcher's expectations might skew the results of the study. Remember, conducting an experiment requires a lot of planning, and the people involved in the research project have a vested interest in supporting their hypotheses. If the observers knew which child was in which group, it might influence how much attention they paid to each child's behavior as well as how they interpreted that behavior. By being blind to which child is in which group, we protect against those biases. This situation is a **single-blind study**, meaning that the participants are unaware as to which group they are in (experiment or control group) while the researcher knows which participants are in each group.

In a **double-blind study**, both the researchers and the participants are blind to group assignments. Why would a researcher want to run a study where no one knows who is in which group? Because by doing so, we can control for both experimenter and participant expectations. If you are familiar with the phrase **placebo effect**, you already have some idea as to why this is an important consideration. The placebo effect occurs when people's expectations or beliefs influence or determine their experience in a given situation. In other words, simply expecting something to happen can actually make it happen.



The placebo effect is commonly described in terms of testing the effectiveness of a new medication. Imagine that you work in a pharmaceutical company, and you think you have a new drug that is effective in treating depression. To demonstrate that your medication is effective, you run an experiment with two groups: The experimental group receives the medication, and the control group does not. But you don't want participants to know whether they received the drug or not.

Why is that? Imagine that you are a participant in this study, and you have just taken a pill that you think will improve your mood. Because you expect the pill to have an effect, you might feel better simply because you took the pill and not because of any drug actually contained in the pill—this is the placebo effect.

To make sure that any effects on mood are due to the drug and not due to expectations, the control group receives a placebo (in this case, a sugar pill). Now everyone gets a pill, and once again, neither the researcher nor the experimental participants know who got the drug and who got the sugar pill. Any differences in mood between the experimental and control groups can now be attributed to the drug itself rather than to experimenter bias or participant expectations.

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Video 2. *Introduction to Experimental Design* introduces fundamental elements for experimental research design.

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Independent and Dependent Variables

In a research experiment, we strive to study whether changes in one thing cause changes in another. To achieve this, we must pay attention to two important variables, or things that can be changed, in any experimental study: the independent variable and the dependent variable. An **independent variable** is manipulated or controlled by the experimenter. In a well-designed experimental study, the independent variable is the only important difference between the experimental and control groups. In our example of how violent television programs affect children's display of violent behavior, the independent variable is the type of program—violent or nonviolent—viewed by participants in the study (Figure 2.3). A **dependent variable** is what the researcher measures to see how much effect the independent variable had. In our example, the dependent variable is the number of violent acts displayed by the experimental participants.

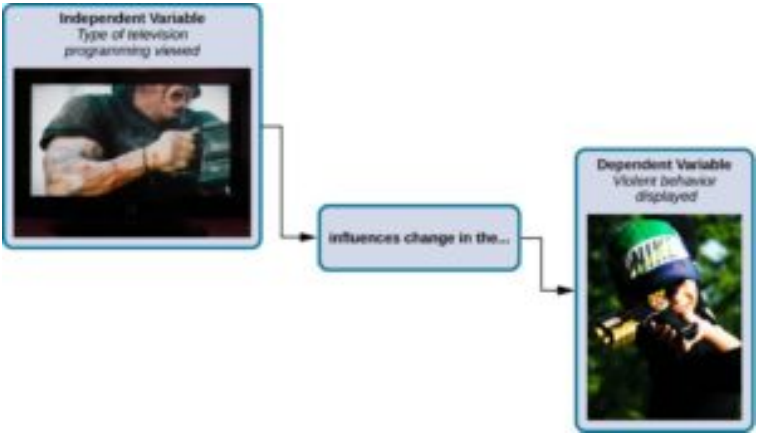


Figure 1. In an experiment, manipulations of the independent variable are expected to result in changes in the dependent variable.

We expect that the dependent variable will change as a function of the independent variable. In other words, the dependent variable *depends* on the independent variable. A good way to think about the relationship between the independent and dependent variables is with this question: What effect does the independent variable have on the dependent variable? Returning to our example, what effect does watching a half-hour of violent television programming or nonviolent television programming have on the number of incidents of physical aggression displayed on the playground?

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Selecting and Assigning Experimental Participants

Now that our study is designed, we need to obtain a sample of individuals to include in our experiment. Our study involves human participants, so we need to determine who to include. **Participants** are the subjects of psychological research, and as the name implies, individuals who are involved in psychological research actively participate in the process. Often, psychological research projects rely on college students to serve as participants. In fact, the vast majority of research in psychology subfields has historically involved students as research participants (Sears, 1986; Arnett, 2008). But are college students truly representative of the general population? College students tend to be younger, more educated, more liberal, and less diverse than the general population. Although using students as test subjects is an accepted practice, relying on such a limited pool of research participants can be problematic because it is difficult to generalize findings to the larger population.

Our hypothetical experiment involves children, and we must first generate a sample of child participants. Samples are used because populations are usually too large to reasonably involve every member in our particular experiment (Figure 2.4). If possible, we should use a random sample (there are other types of samples, but for the purposes of this chapter, we will focus on random samples). A **random sample** is a subset of a larger population in which every member of the population has an equal chance of being selected.

Random samples are preferred because if the sample is large enough we can be reasonably sure that the participating individuals are representative of the larger population. This means that the percentages of characteristics in the sample—sex, ethnicity, socioeconomic level, and any other characteristics that might affect the results—are close to those percentages in the larger population.

In our example, let's say we decide our population of interest is fourth graders. But all fourth graders is a very large population, so we need to be more specific; instead, we might say our population of interest is all fourth graders in a particular city. We should include students from various income brackets, family situations, races, ethnicities, religions, and geographic areas of town. With this more manageable population, we can work with the local schools in selecting a random sample of around 200 fourth-graders that we want to participate in our experiment.

In summary, because we cannot test all of the fourth graders in a city, we want to find a group of about 200 that reflects the composition of that city. With a representative group, we can generalize our findings to the larger population without fear of our sample being biased in some way.



Figure 2. Researchers may work with (a) a large population or (b) a sample group that is a subset of the larger population.

Now that we have a sample, the next step of the experimental process is to split the participants into experimental and control

groups through random assignment. With **random assignment**, all participants have an equal chance of being assigned to either group. There is statistical software that will randomly assign each of the fourth graders in the sample to either the experimental or the control group.

Random assignment is critical for sound experimental design. With sufficiently large samples, random assignment makes it unlikely that there are systematic differences between the groups. So, for instance, it would be improbable that we would get one group composed entirely of males, a given ethnic identity, or a given religious ideology. This is important because if the groups were systematically different before the experiment began, we would not know the origin of any differences we find between the groups: Were the differences preexisting, or were they caused by manipulation of the independent variable? Random assignment allows us to assume that any differences observed between experimental and control groups result from the manipulation of the independent variable.

Exercises

Use this online tool to generate randomized numbers instantly and to learn more about random sampling and assignments.

Issues to Consider

While experiments allow scientists to make cause-and-effect claims, they are not without problems. True experiments require the experimenter to manipulate an independent variable, and that

can complicate many questions that psychologists might want to address. For instance, imagine that you want to know what effect sex (the independent variable) has on spatial memory (the dependent variable). Although you can certainly look for differences between males and females on a task that taps into spatial memory, you cannot directly control a person's sex. We categorize this type of research approach as quasi-experimental and recognize that we cannot make cause-and-effect claims in these circumstances.

Experimenters are also limited by ethical constraints. For instance, you would not be able to conduct an experiment designed to determine if experiencing abuse as a child leads to lower levels of self-esteem among adults. To conduct such an experiment, you would need to randomly assign some experimental participants to a group that receives abuse, and that experiment would be unethical.

Interpreting Experimental Findings

Once data is collected from both the experimental and the control groups, a **statistical analysis** is conducted to find out if there are meaningful differences between the two groups. The statistical analysis determines how likely any difference found is due to chance (and thus not meaningful). In psychology, group differences are considered meaningful, or significant, if the odds that these differences occurred by chance alone are 5 percent or less. Stated another way, if we repeated this experiment 100 times, we would expect to find the same results at least 95 times out of 100.

The greatest strength of experiments is the ability to assert that any significant differences in the findings are caused by the independent variable. This occurs because random selection, random assignment, and a design that limits the effects of both experimenter bias and participant expectancy should create groups that are similar in composition and treatment. Therefore, any difference between the groups is attributable to the independent

variable, and now we can finally make a causal statement. If we find that watching a violent television program results in more violent behavior than watching a nonviolent program, we can safely say that watching violent television programs causes an increase in the display of violent behavior.



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Developmental Research Designs

Sometimes, especially in developmental research, the researcher is interested in examining changes over time and will need to consider a research design that will capture these changes. Remember, *research methods* are tools that are used to collect information, while r**esearch design** is the strategy or blueprint for deciding how to collect and analyze information. Research design dictates which methods are used and how. There are three types of developmental research designs: cross-sectional, longitudinal, and sequential.



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Video 2.9.1. *Developmental Research Design* summarizes the benefits of challenges of the three developmental design models.

Cross-Sectional Designs

The majority of developmental studies use cross-sectional designs because they are less time-consuming and less expensive than other developmental designs. **Cross-sectional research** designs are used to examine behavior in participants of different ages who are

tested at the same point in time. Let's suppose that researchers are interested in the relationship between intelligence and aging. They might have a hypothesis that intelligence declines as people get older. The researchers might choose to give a particular intelligence test to individuals who are 20 years old, individuals who are 50 years old, and individuals who are 80 years old at the same time and compare the data from each age group. This research is cross-sectional in design because the researchers plan to examine the intelligence scores of individuals of different ages within the same study at the same time; they are taking a "cross-section" of people at one point in time. Let's say that the comparisons find that the 80-year-old adults score lower on the intelligence test than the 50-year-old adults, and the 50-year-old adults score lower on the intelligence test than the 20-year-old adults. Based on these data, the researchers might conclude that individuals become less intelligent as they get older. Would that be a valid (accurate) interpretation of the results?

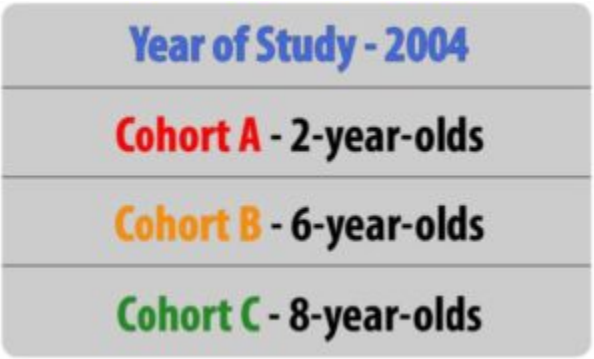


Figure 2.9.1. Example of cross-sectional research design

No, that would not be a valid conclusion because the researchers did not follow individuals as they aged from 20 to 50 to 80 years old. One of the primary limitations of cross-sectional research is that the results yield information about age *differences* not

necessarily *changes* over time. That is, although the study described above can show that the 80-year-olds scored lower on the intelligence test than the 50-year-olds, and the 50-year-olds scored lower than the 20-year-olds, the data used for this conclusion were collected from different individuals (or groups). It could be, for instance, that when these 20-year-olds get older, they will still score just as high on the intelligence test as they did at age 20. Similarly, maybe the 80-year-olds would have scored relatively low on the intelligence test when they were young; the researchers don't know for certain because they did not follow the same individuals as they got older.

With each cohort being members of a different generation, it is also possible that the differences found between the groups are not due to age, per se, but due to cohort effects. Differences between these cohorts' IQ results could be due to differences in life experiences specific to their generation, such as differences in education, economic conditions, advances in technology, or changes in health and nutrition standards, and not due to age-related changes.

Another disadvantage of cross-sectional research is that it is limited to one time of measurement. Data are collected at one point in time, and it's possible that something could have happened in that year in history that affected all of the participants, although possibly each cohort may have been affected differently.



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Longitudinal Research Designs



Longitudinal research involves beginning with a group of people who may be of the same age and background (cohort) and measuring them repeatedly over a long period of time. One of the benefits of this type of research is that people can be followed through time and be compared with themselves when they were younger; therefore, changes with age over time are measured. What would be the advantages and disadvantages of longitudinal research? Problems with this type of research include being expensive, taking a long time, and subjects dropping out over time.

Longitudinal research designs are used to examine behavior in the same individuals over time. For instance, with our example of studying intelligence and aging, a researcher might conduct a longitudinal study to examine whether 20-year-olds become less intelligent with age over time. To this end, a researcher might give an intelligence test to individuals when they are 20 years old, again when they are 50 years old, and then again when they are 80 years old. This study is longitudinal in nature because the researcher plans to study the same individuals as they age. Based on these data, the pattern of intelligence and age might look different than from the cross-sectional research; it might be found that participants' intelligence scores are higher at age 50 than at age 20 and then remain stable or decline a little by age 80. How can that be when cross-sectional research revealed declines in intelligence with age?



Figure 2.9.2. Example of a longitudinal research design

Since longitudinal research happens over a period of time (which could be short term, as in months, but is often longer, as in years), there is a risk of attrition. **Attrition** occurs when participants fail to complete all portions of a study. Participants may move, change their phone numbers, die, or simply become disinterested in participating over time. Researchers should account for the possibility of attrition by enrolling a larger sample into their study initially, as some participants will likely drop out over time. There is also something known as **selective attrition—**this means that certain groups of individuals may tend to drop out. It is often the least healthy, least educated, and lower socioeconomic participants who tend to drop out over time. That means that the remaining participants may no longer be representative of the whole population, as they are, in general, healthier, better educated, and have more money. This could be a factor in why our hypothetical research found a more optimistic picture of intelligence and aging as the years went by. What can researchers do about selective attrition? At each time of testing, they could randomly recruit more participants from the same cohort as the original members to replace those who have dropped out.

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The results from longitudinal studies may also be impacted by repeated assessments. Consider how well you would do on a math test if you were given the exact same exam every day for a week. Your performance would likely improve over time, not necessarily

because you developed better math abilities, but because you were continuously practicing the same math problems. This phenomenon is known as a practice effect. Practice effects occur when participants become better at a task over time because they have done it again and again (not due to natural psychological development). So our participants may have become familiar with the intelligence test each time (and with the computerized testing administration).

Another limitation of longitudinal research is that the data are limited to only one cohort. As an example, think about how comfortable the participants in the 2010 cohort of 20-year-olds are with computers. Since only one cohort is being studied, there is no way to know if findings would be different from other cohorts. In addition, changes that are found as individuals age over time could be due to age or to time of measurement effects. That is, the participants are tested at different periods in history, so the variables of age and time of measurement could be confounded (mixed up). For example, what if there is a major shift in workplace training and education between 2020 and 2040, and many of the participants experience a lot more formal education in adulthood, which positively impacts their intelligence scores in 2040? Researchers wouldn't know if the intelligence scores increased due to growing older or due to a more educated workforce over time between measurements.

Sequential Research Designs

Sequential research designs include elements of both longitudinal and cross-sectional research designs. Similar to longitudinal designs, sequential research features participants who are followed over time; similar to cross-sectional designs, sequential research includes participants of different ages. This research design is also distinct from those that have been discussed previously in

that individuals of different ages are enrolled into a study at various points in time to examine age-related changes, development within the same individuals as they age, and to account for the possibility of cohort and/or time of measurement effects

Consider, once again, our example of intelligence and aging. In a study with a sequential design, a researcher might recruit three separate groups of participants (Groups A, B, and C). Group A would be recruited when they are 20 years old in 2010 and would be tested again when they are 50 and 80 years old in 2040 and 2070, respectively (similar in design to the longitudinal study described previously). Group B would be recruited when they are 20 years old in 2040 and would be tested again when they are 50 years old in 2070. Group C would be recruited when they are 20 years old in 2070, and so on.

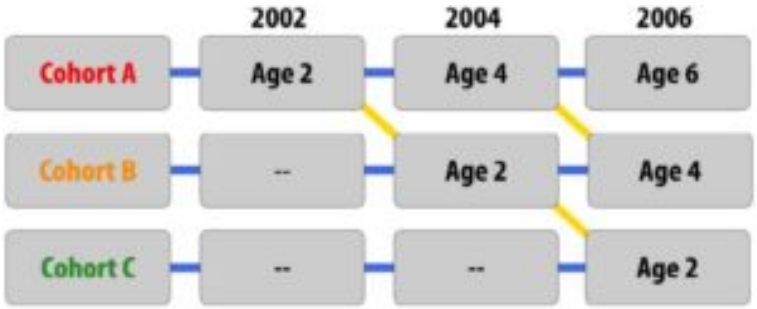


Figure 2.9.3. Example of sequential research design

Studies with sequential designs are powerful because they allow for both longitudinal and cross-sectional comparisons—changes and/or stability with age over time can be measured and compared with differences between age and cohort groups. This research design also allows for the examination of cohort and time of measurement effects. For example, the researcher could examine the intelligence scores of 20-year-olds at different times in history and different cohorts (follow the yellow diagonal lines in figure 3). This might be examined by researchers who are interested in

sociocultural and historical changes (because we know that lifespan development is multidisciplinary). One way of looking at the usefulness of the various developmental research designs was described by Schaie and Baltes (1975): cross-sectional and longitudinal designs might reveal change patterns while sequential designs might identify developmental origins for the observed change patterns.

Since they include elements of longitudinal and cross-sectional designs, sequential research has many of the same strengths and limitations as these other approaches. For example, sequential work may require less time and effort than longitudinal research (if data are collected more frequently than over the 30-year spans in our example) but more time and effort than cross-sectional research. Although practice effects may be an issue if participants are asked to complete the same tasks or assessments over time, attrition may be less problematic than what is commonly experienced in longitudinal research since participants may not have to remain involved in the study for such a long period of time.

Comparing Developmental Research Designs

When considering the best research design to use in their research, scientists think about their main research question and the best way to come up with an answer. A table of advantages and disadvantages for each of the described research designs is provided here to help you as you consider what sorts of studies would be best conducted using each of these different approaches.

Table 2.9.1. Advantages and disadvantages of different research designs

	Advantages	Disadvantages
Cross-Sectional	• Examines changes between participants of different ages at the same point in time • Provides information on age differences	• Cannot examine change over time • Limited to one time in history • Cohort differences confounded with age differences
Longitudinal	• Examines changes within individuals over time • Provides a developmental analysis	• Expensive • Takes a long time • Participant attrition • Possibility of practice effects • Limited to one cohort • Time in history effects confounded with age changes
Sequential	• Examines changes within individuals over time • Examines changes between participants of different ages at the same point in time • Can be used to examine cohort effects • Can be used to examine time in history effects	• May be expensive • May take a long time • Possibility of practice effects • Some participant attrition

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Challenges in Conducting Developmental Research

The previous sections describe research tools to assess development across the lifespan, as well as the ways that research designs can be used to track age-related changes and development over time. Before you begin conducting developmental research, however, you must also be aware that testing individuals of certain ages (such as infants and children) or making comparisons across ages (such as children compared to teens) comes with its own unique set of challenges. In the final section of this module, let's look at some of the main issues that are encountered when conducting developmental research, namely ethical concerns, recruitment issues, and participant attrition.

Ethical Concerns

As a student of the social sciences, you may already know that **Institutional Review Boards (IRBs)** must review and approve all research projects that are conducted at universities, hospitals, and other institutions (each broad discipline or field, such as psychology or social work, often has its own code of ethics that must also be followed, regardless of institutional affiliation). An IRB is typically a panel of experts who read and evaluate proposals for research. IRB members want to ensure that the proposed research will be carried out ethically and that the potential benefits of the research outweigh the risks and potential harm (psychological as well as physical harm) for participants.

What you may not know though, is that the IRB considers some groups of participants to be more vulnerable or at-risk than others.

Whereas university students are generally not viewed as vulnerable or at-risk, infants and young children commonly fall into this category. What makes infants and young children more vulnerable during research than young adults? One reason infants and young children are perceived as being at increased risk is due to their limited cognitive capabilities, which makes them unable to state their willingness to participate in research or tell researchers when they would like to drop out of a study. For these reasons, infants and young children require special accommodations as they participate in the research process. Similar issues and accommodations would apply to adults who are deemed to be of limited cognitive capabilities.

When thinking about special accommodations in developmental research, consider the **informed consent** process. If you have ever participated in scientific research, you may know through your own experience that adults commonly sign an informed consent statement (a contract stating that they agree to participate in research) after learning about a study. As part of this process, participants are informed of the procedures to be used in the research, along with any expected risks or benefits. Infants and young children cannot verbally indicate their willingness to participate, much less understand the balance of potential risks and benefits. As such, researchers are oftentimes required to obtain written informed consent from the parent or legal guardian of the child participant, an adult who is almost always present as the study is conducted. In fact, children are not asked to indicate whether they would like to be involved in a study at all (a process known as assent) until they are approximately seven years old. Because infants and young children cannot easily indicate if they would like to discontinue their participation in a study, researchers must be sensitive to changes in the state of the participant (determining whether a child is too tired or upset to continue) as well as to parent desires (in some cases, parents might want to discontinue their involvement in the research). As in adult studies, researchers must always strive to protect the rights and well-being of the minor

participants and their parents when conducting developmental research.



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Video 2.10.1. *How IRBs Protect Human Research Participants* explains the purpose of IRBs in assuring the health and safety of participants in research.

Recruitment

An additional challenge in developmental science is participant recruitment. Recruiting university students to participate in adult studies is typically easy. Many colleges and universities offer extra credit for participation in research and have locations such as bulletin boards and school newspapers where research can be advertised. Unfortunately, young children cannot be recruited by making announcements in Introduction to Psychology courses, by posting ads on campuses, or through online platforms such as Amazon Mechanical Turk. Given these limitations, how do researchers go about finding infants and young children to be in their studies?

The answer to this question varies along multiple dimensions. Researchers must consider the number of participants they need and the financial resources available to them, among other things. Location may also be an important consideration. Researchers who

need large numbers of infants and children may attempt to recruit them by obtaining infant birth records from the state, county, or province in which they reside. Some areas make this information publicly available for free, whereas birth records must be purchased in other areas (and in some locations birth records may be entirely unavailable as a recruitment tool). If birth records are available, researchers can use the obtained information to call families by phone or mail them letters describing possible research opportunities. All is not lost if this recruitment strategy is unavailable, however. Researchers can choose to pay a recruitment agency to contact and recruit families for them. Although these methods tend to be quick and effective, they can also be quite expensive. More economical recruitment options include posting advertisements and fliers in locations frequented by families, such as mommy-and-me classes, local malls, and preschools or daycare centers. Researchers can also utilize online social media outlets like Facebook, which allows users to post recruitment advertisements for a small fee. Of course, each of these different recruitment techniques requires IRB approval. And if children are recruited and/or tested in school settings, permission would need to be obtained ahead of time from teachers, schools, and school districts (as well as informed consent from parents or guardians).

And what about the recruitment of adults? While it is easy to recruit young college students to participate in research, some would argue that it is too easy and that college students are samples of convenience. They are not randomly selected from the wider population, and they may not represent all young adults in our society (this was particularly true in the past with certain cohorts, as college students tended to be mainly white males of high socioeconomic status). In fact, in the early research on aging, this type of convenience sample was compared with another type of convenience sample—young college students tended to be compared with residents of nursing homes! Fortunately, it didn't take long for researchers to realize that older adults in nursing homes are not representative of the older population; they tend to

be the oldest and sickest (physically and/or psychologically). Those initial studies probably painted an overly negative view of aging, as young adults in college were being compared to older adults who were not healthy, had not been in school nor taken tests in many decades, and probably did not graduate high school, let alone college. As we can see, recruitment and random sampling can be significant issues in research with adults, as well as infants and children. For instance, how and where would you recruit middle-aged adults to participate in your research?

Attrition



Another important consideration when conducting research with infants and young children is **attrition**. Although attrition is quite common in longitudinal research in particular (see the previous section on longitudinal designs for an example of high attrition rates and selective attrition in lifespan developmental research), it is also problematic in developmental science more generally, as studies with infants and young children tend to have higher attrition rates than studies with adults. For example, high attrition rates in ERP (event-related potential, which is a technique to understand brain function) studies oftentimes result from the demands of the task: infants are required to sit still and have a tight, wet cap placed on their heads before watching still photographs on a computer screen in a dark, quiet room. In other cases, attrition may be due to motivation (or a lack thereof). Whereas adults may be motivated to participate in

research in order to receive money or extra course credit, infants and young children are not as easily enticed. In addition, infants and young children are more likely to tire easily, become fussy, and lose interest in the study procedures than are adults. For these reasons, research studies should be designed to be as short as possible – it is likely better to break up a large study into multiple short sessions rather than cram all of the tasks into one long visit to the lab. Researchers should also allow time for breaks in their study protocols so that infants can rest or have snacks as needed. Happy, comfortable participants provide the best data.

Conclusions

Lifespan development is a fascinating field of study – but care must be taken to ensure that researchers use appropriate methods to examine human behavior, use the correct experimental design to answer their questions, and be aware of the special challenges that are part-and-parcel of developmental research. After reading this module, you should have a solid understanding of these various issues and be ready to think more critically about research questions that interest you. For example, what types of questions do you have about lifespan development? What types of research would you like to conduct? Many interesting questions remain to be examined by future generations of developmental scientists – maybe you will make one of the next big discoveries!



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Glossary

attrition: reduction in the number of research participants as some drop out over time

case study: exploring a single case or situation in great detail. Information may be gathered with the use of observation, interviews, testing, or other methods to uncover as much as possible about a person or situation

cohort: a group of people who are born at roughly the same period in a particular society. Cohorts share histories and contexts for living

content analysis: involves looking at media such as old texts, pictures, commercials, lyrics or other materials to explore patterns or themes in culture

control group: a comparison group that is equivalent to the experimental group, but is not given the independent variable

correlation: the relationship between two or more variables; when two variables are correlated, one variable changes as the other does

correlation coefficient: number from -1 to +1, indicating the strength and direction of the relationship between variables, and usually represented by r

correlational research: research that formally tests whether a relationship exists between two or more variables, however, correlation does not imply causation

cross-sectional research: used to examine behavior in participants of different ages who are tested at the same point in time; may confound age and cohort differences

dependent variable: the outcome or variable that is supposedly affected by the independent variable

descriptive studies: research focused on describing an occurrence

double-blind: a research design in which neither the participants

nor the researchers know whether an individual is assigned to the experimental group or the control group

experimental group: the group of participants in an experiment who receive the independent variable

experimental research: research that involves randomly assigning people to different conditions and using hypothesis testing to make inferences about how these conditions affect behavior; the only method that measures cause and effect between variables

experiments: designed to test hypotheses in a controlled setting in efforts to explain how certain factors or events produce outcomes; the only research method that measures cause and effect relationships between variables

explanatory studies: research that tries to answer the question "why"

Hawthorne effect: individuals tend to change their behavior when they know they are being watched

hypotheses: specific statements or predictions about the relationship between variables

independent variable: something that is manipulated or introduced by the researcher to the experimental group; treatment or intervention

longitudinal research: studying a group of people who may be of the same age and background (cohort), and measuring them repeatedly over a long period of time; may confound age and time of measurement effects

negative correlation: two variables change in different directions, with one becoming larger as the other becomes smaller; a negative correlation is not the same thing as no correlation

observational studies: also called naturalistic observation, involves watching and recording the actions of participants

operationalized: concepts transformed into variables that can be measured in research

positive correlation: two variables change in the same direction, both becoming either larger or smaller

qualitative research: theoretical ideas are "grounded" in the experiences of the participants, who answer open-ended questions

quantitative research: involves numerical data that are quantified using statistics to understand and report what has been studied

reliability: when something yields consistent results

research design: the strategy or blueprint for deciding how to collect and analyze information; dictates which methods are used and how

scatterplot: a plot or mathematical diagram consisting of data points that represent two variables

secondary content analysis: archival research, involves analyzing information that has already been collected or examining documents or media to uncover attitudes, practices or preferences

selective attrition: certain groups of individuals may tend to drop out more frequently resulting in the remaining participants longer being representative of the whole population

sequential research design: combines aspects of cross-sectional and longitudinal designs, but also adding new cohorts at different times of measurement; allows for analyses to consider effects of age, cohort, time of measurement, and socio-historical change

survey: asking a standard set of questions to a group of subjects

validity: when something yields accurate results

variables: factors that change in value

DEVELOPMENTAL THEORIES

Learning Objectives

- Describe theories as they relate to lifespan development
- Describe the historical foundations leading to the development of theories about lifespan development
- Describe Freud's theory of psychosexual development
- Describe Erikson's eight stages of psychosocial development
- Describe the principles of classical conditioning
- Describe the principles of operant conditioning
- Describe social learning theory
- Describe Piaget's theory of cognitive development
- Describe information processing approaches to cognitive development
- Describe the major concepts of humanistic theory (unconditional positive regard, the good life), as developed by Carl Rogers
- Explain Maslow's hierarchy of needs
- Describe Vygotsky's sociocultural theory of cognitive development
- Explain Bronfenbrenner's bioecological model
- Describe the evolutionary perspective
- Contrast the main psychological theories that apply

to human development



Figure 1 *Child labor in Indiana glassworks. (Hine, 1908) Society's view of childhood has changed through the ages. Many children in the early 1900's worked full time in mines.*

Childhood as a concept first emerged around the 17th century. In 1960, Philippe Ariès wrote a book called *L'Enfant et la Vie Familiale sous l'Ancien Régime* (1960), which was translated into English as *Centuries of Childhood* (1962). The book was significant both in that it recognized childhood as a social construction rather than as a biological given and in so doing, it founded the history of childhood as a serious field of study.

Ariès argued that childhood was not understood as a separate stage of life until the 15th century, and children were seen as little adults who shared the same traditions, games, and clothes. He said that parenting during the Middle Ages was largely detached, and

there were not nuclear family bonds of love and concern. His account of childhood has since been widely criticized, but even today, Ariès remains the standard reference to the topic. He is most famous for his statement that "in medieval society, the idea of childhood did not exist".

Attitudes towards children have evolved over time along with economic change and social advancement. Before the 17th century, children were generally considered weaker, more insignificant versions of adults. They were assumed to be subject to the same needs and desires as adults and to have the same vices and virtues as adults. Therefore they dressed the same, were not warranted more privileges, and they worked the same hours and received the same punishments for misdeeds. If they stole, they were hanged. If they worked hard and did well, they could achieve prosperity. Children were considered adults as soon as they could live alone.

At the time, this was society's view of lifespan development. The only difference between children and adults was size. We now reject this medieval view, but how do we go about formulating contemporary theories? Our own personal theories about development are based on experiences, folklore, stories in the media, or built haphazardly on unverified observation. However, theories presented in this course are more formal. They are based on prior findings and observations by psychologists and other researchers and provide a framework through which we can draw conclusions and make predictions about human behavior. These theories are subject to rigorous testing through research and are based on a psychological approach. A **psychological approach** is a perspective, based on certain assumptions, about behavior. Each approach holds shared ideas about how to describe, predict, and explain behavior.

In this chapter, we will discuss the major psychological approaches that pertain to development. But first, we will briefly review some of the early founders of the field of developmental psychology. We will then examine the major characteristics of the

contemporary approaches: psychodynamic, behavioral, humanistic, cognitive, contextual, biological, and evolutionary psychology.

Understanding Theories

Scientific knowledge is advanced through a process known as the scientific method. Basically, ideas (in the form of theories and hypotheses) are tested against the real world (in the form of empirical observations), and those empirical observations lead to more ideas that are tested against the real world, and so on. In this sense, the scientific process is circular. The types of reasoning within the circle are called deductive and inductive. In **deductive reasoning**, ideas are tested against the empirical world; in **inductive reasoning**, empirical observations lead to new ideas (Figure 2.4). These processes are inseparable, like inhaling and exhaling, but different research approaches place different emphasis on the deductive and inductive aspects.

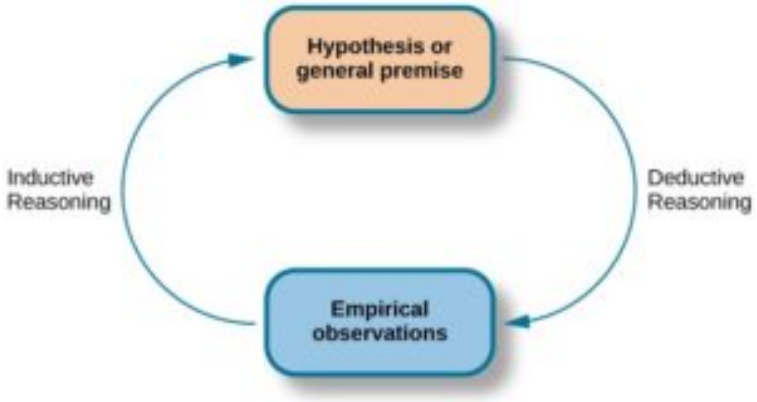


Figure 1. Psychological research relies on both inductive and deductive reasoning.

In the scientific context, deductive reasoning begins with a generalization—one hypothesis—that is then used to reach logical conclusions about the real world. If the hypothesis is correct, then

the logical conclusions reached through deductive reasoning should also be correct. A deductive reasoning argument might go something like this: All living things require energy to survive (this would be your hypothesis). Ducks are living things. Therefore, ducks require energy to survive (logical conclusion). In this example, the hypothesis is correct; therefore, the conclusion is correct as well. Sometimes, however, an incorrect hypothesis may lead to a logical but incorrect conclusion. Consider this argument: all ducks are born with the ability to see. Quackers is a duck. Therefore, Quackers was born with the ability to see. Scientists use deductive reasoning to test their hypotheses empirically. Returning to the example of the ducks, researchers might design a study to test the hypothesis that if all living things require energy to survive, then ducks will be found to require energy to survive.

Deductive reasoning starts with a generalization that is tested against real-world observations; however, inductive reasoning moves in the opposite direction. Inductive reasoning uses empirical observations to construct broad generalizations. Unlike deductive reasoning, conclusions drawn from inductive reasoning may or may not be correct, regardless of the observations on which they are based. For instance, you may notice that your favorite fruits—apples, bananas, and oranges—all grow on trees; therefore, you assume that all fruit must grow on trees. This would be an example of inductive reasoning, and the existence of strawberries, blueberries, and kiwi demonstrate that this generalization is not correct despite it being based on several direct observations. Scientists use inductive reasoning to formulate theories, which in turn generate hypotheses that are tested with deductive reasoning. In the end, science involves both deductive and inductive processes.

For example, case studies are heavily weighted on the side of empirical observations. Thus, case studies are closely associated with inductive processes as researchers gather massive amounts of observations and seek interesting patterns (new ideas) in the data. Experimental research, on the other hand, puts great emphasis on deductive reasoning.

What is a Theory?

We have stated that theories and hypotheses are ideas, but what sort of ideas are they, exactly? A **theory** is a well-developed set of ideas that propose an explanation for observed phenomena. Theories are repeatedly checked against the world, but they tend to be too complex to be tested all at once; instead, researchers create hypotheses to test specific aspects of a theory.

A **hypothesis** is a testable prediction about how the world will behave if our idea is correct, and it is often worded as an if-then statement (e.g., if I study all night, I will get a passing grade on the test). The hypothesis is critical because it bridges the gap between the realm of ideas and the real world. As specific hypotheses are tested, theories are modified and refined to reflect and incorporate the result of these tests (Figure 3.2).

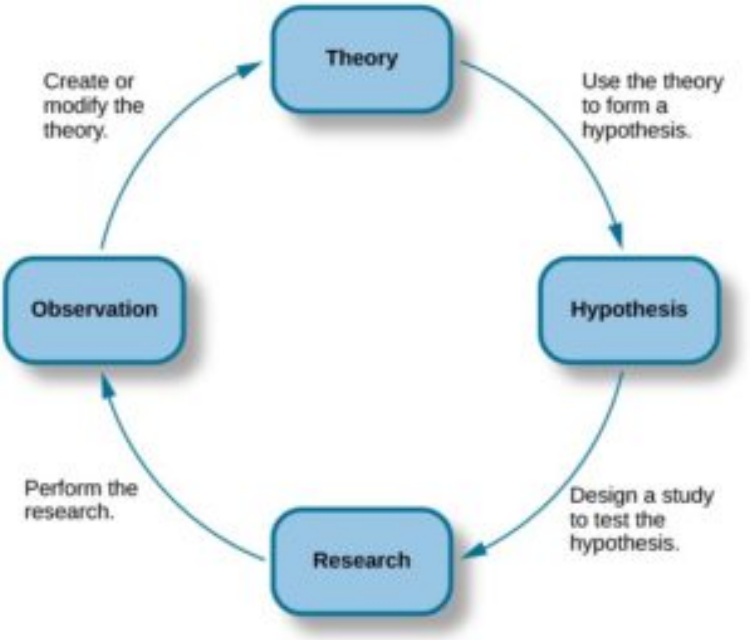


Figure 2. The scientific method of research includes proposing hypotheses, conducting research, and creating or modifying theories based on results.

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To see how this process works, let us consider a specific theory and a hypothesis that might be generated from that theory. The James-Lange theory of emotion asserts that emotional experience relies on the physiological arousal associated with the emotional state. If you walked out of your home and discovered a very aggressive snake waiting on your doorstep, your heart would begin to race and your stomach churn. According to the James-Lange theory, these physiological changes would result in your feeling of fear. A hypothesis that could be derived from this theory might be that a person who is unaware of the physiological arousal that the sight of the snake elicits will not feel fear.

A scientific hypothesis is also **falsifiable** or capable of being shown to be incorrect. For example, Sigmund Freud had lots of interesting ideas to explain various human behaviors; however, a major criticism of Freud's theories is that many of his ideas cannot be empirically tested and thus are not falsifiable. Despite this, Freud's theories are widely taught in introductory psychology texts because of their historical significance for personality psychology and psychotherapy, and these remain the root of all modern forms of therapy.

In contrast, the James-Lange theory does generate falsifiable hypotheses, such as the one described above. Some individuals who

suffer significant injuries to their spinal columns are unable to feel the bodily changes that often accompany emotional experiences. Therefore, we could test the hypothesis by determining how emotional experiences differ between individuals who can detect these changes in their physiological arousal and those who do not. In fact, this research has been conducted, and while the emotional experiences of people deprived of an awareness of their physiological arousal may be less intense, they still experience emotion (Chwalisz, Diener, & Gallagher, 1988).

Scientific research's dependence on falsifiability allows for high confidence in the information that it produces. Typically, by the time information is accepted by the scientific community, it has been tested repeatedly. However, in the early years of studying development, theories were often based on philosophy and inductive reasoning, and could not always provide empirical evidence to support these ideas. In the late 1800s, a transformation occurred when philosophy met physiology and adopted the scientific methods used by the physical sciences to explore questions about behavior and the mind.



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Video 1. *Hypothesis vs Theory* explains the differences between the two.





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History of Developmental Psychology



Figure 1. Some key figures in the early development of psychology. Front row: Sigmund Freud, G. Stanley Hall, Carl Jung. Back row: Abraham A. Brill, Ernest Jones, Sándor Ferenczi, at Clark University in Worcester, Massachusetts. Date: September 1909.

The scientific study of children and adolescents began in the late nineteenth century and blossomed in the early twentieth century as pioneering psychologists sought to uncover the secrets of human behavior by studying its development. Three early scholars, John Locke, Jean-Jacques Rousseau, and Charles Darwin, proposed theories of human behavior that are the "direct ancestors of the

three major theoretical traditions" of developmental psychology today" (Vasta et al., 1998, p. 10). Locke, a British empiricist, adhered to a strict environmentalist position, that the mind of the newborn as a tabula rasa ("blank slate") on which knowledge is written through experience and learning. Rousseau, a Swiss philosopher who spent much of his life in France, proposed a nativistic model in his famous novel, *Emile*, in which development occurs according to innate processes progressing through three stages: Infans (infancy), puer (childhood), and adolescence. Rousseau detailed some of the necessary progression through these stages in order to develop into an ideal citizen. Although some aspects of his text were controversial, Rousseau's ideas were powerfully influential on educators at the time. Finally, the work of Darwin, the British biologist famous for his theory of evolution, led others to suggest that development proceeds through evolutionary recapitulation, with many human behaviors having their origins in successful adaptations in the past as "ontogeny recapitulates phylogeny."

G. Stanley Hall

Darwin's theories greatly influenced G. Stanley Hall, who believed that children developed over their lifetime much in the same way that a species evolved throughout time. His interests focused on childhood development, adolescence, and evolutionary theory. His significant contributions to the field are that he taught the first courses in child development, several of his students becoming leading researchers in the field, and he established scientific journals for the publication of child development research. He was also the first president of the American Psychological Association.

James Mark Baldwin

Another early contributor to the study of development was James Mark Baldwin (1861-1934), a Princeton-educated American philosopher and psychologist who did quantitative and experimental research on infant development. He made important contributions to early psychology, psychiatry, and the theory of evolution. Baldwin wrote essays such as "Mental Development in the Child and the Race: Methods and Processes," which made a vivid impression on Jean Piaget (who later developed the most popular theory of cognitive development) and Lawrence Kohlberg (who developed a theory about moral judgment and development).

John B. Watson

The 20th century marked the formation of qualitative distinctions between children and adults. When John Watson wrote the book *Psychological Care Of Infant And Child*, in 1928, he sought to add clarification surrounding behaviorists' views on child care and development. Watson was the founder of the field of behaviorism, which emphasized the role of nurture, or the environment, in human development. He believed, based on Locke's environmentalist position, that human behavior can be understood in terms of experiences and learning. He believed that all behaviors are learned, or conditioned, as evidenced by his famous "Little Albert" study, in which he conditioned an infant to fear a white rat. In Watson's book on the care of the infant and child, Watson explained that children should be treated as a young adult—with respect, but also without emotional attachment. In the book, he warned against the inevitable dangers of a mother providing too much love and affection. Watson explained that love, along with all things observable behavior, is conditioned. Watson supported

his warnings by mentioning invalidism, saying that society does not overly comfort children as they become young adults in the real world, so parents should not set up these unrealistic expectations. His book was highly criticized but was still influential in promoting more research into early childhood behavior and development.



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Sigmund Freud

Another name you are probably familiar with who was influential in the study of development is Sigmund Freud. Sigmund Freud's model of 'psychosexual development' grew out of his psychoanalytic approach to human personality and psychopathology. In sharp contrast to the objective approach espoused by Watson, Freud based his model of child development on his own and his patients' recollections of their childhood. He developed a stage model of development in which the libido, or sexual energy, of the child focuses on different "zones" or areas of the body as the child grows to adulthood. Freud's model is an "interactionist" one since he believed that although the sequence and timing of these stages are biologically determined, successful personality development depends on the experiences the child has during each stage. Although the details of Freud's developmental theory have been widely criticized, his emphasis on the importance of early childhood experiences, prior to five years of age, has had a lasting impact.

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Arnold Gesell

Arnold Gesell, a student of G. Stanley Hall, carried out the first large-scale detailed study of children's behavior, authoring several books on the topic in the 1920s, 30s, and 40s. His research revealed consistent patterns of development, supporting his view that human development depends on biological "maturation," with the environment providing only minor variations in the age at which a skill might emerge but never affecting the sequence or pattern. Gesell's research produced norms, such as the order and the average age range in which a variety of early behaviors such as sitting, crawling, and walking emerge. In conducting his studies, Gesell developed sophisticated observational techniques, including one-way viewing screens and recording methods that did not disturb the child.

Jean Piaget

Jean Piaget (1896-1980) is considered one of the most influential psychologists of the twentieth century, and his stage theory of cognitive development revolutionized our view of children's thinking and learning. His work inspired more research than any

other theorist, and many of his concepts are still foundational to developmental psychology. His interest lay in children's knowledge, their thinking, and the qualitative differences in their thinking as it develops. Although he called his field "genetic epistemology," stressing the role of biological determinism, he also assigned great importance to experience. In his view, children "construct" their knowledge through processes of "assimilation," in which they evaluate and try to understand new information, based on their existing knowledge of the world, and "accommodation," in which they expand and modify their cognitive structures based on new experiences.



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Contemporary Psychological Approaches

Many of the early psychological theories and approaches changed over the years, as new evidence shed light on behavior and development. Some of these approaches have remained a constant influence, some have changed significantly over the years, and some have faded into history. Currently, several major contemporary approaches apply to development: psychodynamic, behavioral, humanistic, cognitive, contextual, biological, and evolutionary approaches.

Regardless of changes to these psychological approaches, throughout history and still in the present day, key issues remain among which developmental theorists often disagree. Particularly oft-disputed is the role of early experiences on later development in opposition to current behavior reflecting present experiences–namely the *passive versus active issue*. Likewise, whether or not development is best viewed as occurring in stages or rather as a gradual and cumulative process of change has traditionally been up for debate – a question of *continuity versus discontinuity*. Also, consider whether the pattern of change the same for everyone, or are there different patterns of change—one course of development versus many courses. Further, the role of heredity and the environment in shaping human development is a much-contested topic of discussion – also referred to as *nature versus nurture debate*. We will examine each of these issues in more detail throughout the chapter.

Psychodynamic Approach

Freud's Psychoanalytic Approach

As previously mentioned, Sigmund Freud (1856-1939), an Austrian neurologist, is probably the most recognized name in psychology, His psychodynamic approach **to** development and psychopathology dominated the field of psychiatry until the growth of behaviorism in the 1930s and beyond. The **psychodynamic approach** emphasizes unconscious psychological processes (for example, wishes and fears of which we are not fully aware), and contends that childhood experiences are crucial in shaping adult personality (Thorne & Henley, 2005). Freud theorized that many of his patients' problems arose from the unconscious mind. In Freud's view, the unconscious mind was a repository of feelings and urges of which we have no awareness. Gaining access to the unconscious, then, was crucial to the successful resolution of the patient's problems. According to Freud, the unconscious mind could be accessed through dream analysis, by examinations of the first words that came to people's minds, and through seemingly innocent slips of the tongue.



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Video 1. *Psychoanalytic Theory* explains the various levels of the

mind and how we develop and behave based on the influences of these various levels.

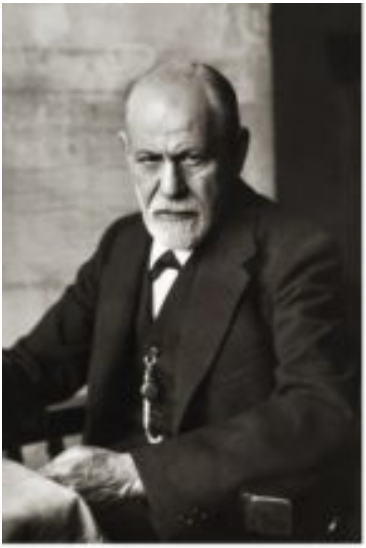


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Freud also made contributions to the advancement of psychotherapy. He began working with 'hysterical' patients and discovered that when they began to talk about some of their life experiences, particularly those that took place in early childhood, their symptoms disappeared. This led him to suggest the first purely psychological explanation for physical problems and mental illness. What he proposed was that unconscious motives, desires, fears, and anxieties drive our actions. When upsetting memories or thoughts begin to find their way into our consciousness, we develop defenses to shield us from these painful realities, called defense mechanisms. Freud believed that many mental illnesses are a result of a person's inability to accept reality.



(a)



(b)

Figure 1. (a) Sigmund Freud was highly influential in the history of psychology. (b) One of his many books, A *General Introduction To Psychoanalysis*, shared his ideas about psychoanalytical therapy; it was published in 1922.

While many of Freud's theories have lost favor, he is still considered to be a very influential figure in the area of development. Freud was the first to systematically study and theorize the workings of the unconscious mind in the manner that we associate with modern psychology. Because psychodynamic theories are difficult to prove wrong, evaluating those theories, in general, is difficult in that we cannot make definite predictions about a given individual's behavior using the theories. The theory is also considered to be sexist in suggesting that women who do not accept an inferior position in society are somehow psychologically flawed. Freud focused on the darker side of human nature and suggested that much of what determines our actions are unknown to us. Others criticize that the psychodynamic approach is too

deterministic, relating to the idea that all events, including human action, are ultimately determined by causes regarded as external to the will, thereby leaving little room for the idea of free will (De St Aubin, 2004).

The psychodynamic perspective has evolved considerably since Freud's time, encompassing all the theories in psychology that see human functioning based upon the interaction of conscious and unconscious drives and forces within the person, and between the different structures of the personality.

Erickson's Psychosocial Theory



Now, let us turn to a less controversial psychodynamic theorist, the father of developmental psychology, Erik Erikson (1902-1994). Erikson was a student of Freud's and expanded on his theory of psychosexual development by emphasizing the importance of culture in parenting practices and motivations and adding stages of adult development (Erikson, 1950; 1968).

As an art school dropout with an uncertain future, young Erik Erikson met Freud's daughter, Anna Freud, while he was tutoring the children of an American couple undergoing psychoanalysis in Vienna. It was Anna Freud who encouraged Erikson to study psychoanalysis. Erikson received his diploma from the Vienna Psychoanalytic Institute in 1933, and as Nazism spread across Europe, he fled the country and immigrated to the United States that same year. Erikson later proposed a

psychosocial theory of development, suggesting that an individual's personality develops throughout the lifespan—a departure from Freud's view that personality is fixed in early life. In his theory, Erikson emphasized the social relationships that are important at each of the eight-stage of psychosocial development, each of which includes a conflict or developmental task. The development of a healthy personality and a sense of competence depend on the successful completion of each task. His stage theory was also different than his predecessor in that he emphasized development throughout the lifespan, not just until adulthood.

Figure 2. Erik Erikson

Table 1. Erikson's Psychosocial Stage Theory

Stage	Approximate Age (years)	Virtue: Developmental Task	Description
1	0-1	**Hope: Trust vs. Mistrust**	Trust (or mistrust) that basic needs, such as nourishment and affection, will be met
2	1-3	**Will: Autonomy vs. Shame**	Sense of independence in many tasks develops
3	3-6	**Purpose: Initiative vs. Guilt**	Take initiative on some activities, may develop guilt when success not met or boundaries overstepped
4	7-11	**Competence: Industry vs. Inferiority**	Develop self-confidence in abilities when competent or sense of inferiority when not
5	12-18	**Fidelity: Identity vs. Role Confusion**	Experiment with and develop identity and roles
6	19-33	**Love: Intimacy vs. Isolation**	Establish intimacy and relationships with others
7	40-64	**Care: Generativity vs. Stagnation**	Contribute to society and be part of a family
8	65+	**Wisdom: Integrity vs. Despair**	Assess and make sense of life and meaning of contributions

Erikson's eight stages form a foundation for discussions on emotional and social development during the lifespan. Keep in mind, however, that these stages or crises can occur more than once or at different times of life. For instance, a person may struggle with a lack of trust beyond infancy. Erikson's theory is criticized for focusing so heavily on stages and assuming that the completion of one stage is a prerequisite for the next crisis of development. His theory also focuses on the social expectations found in certain cultures, but not in all. For instance, the idea that adolescence is a time of searching for identity might translate well in the middle-class culture of the United States, but not as well in cultures where the transition into adulthood coincides with puberty through rites of passage and where adult roles offer fewer choices.



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Video 2. Erikson's Psychosocial Development explains how humans progress through various stages.

By and large, Erikson's view that development continues throughout the lifespan is very significant and has received great recognition. However, like Freud's theory, it has been criticized for focusing on more men than women and also for its vagueness, making it difficult to test rigorously.



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Behavioral Approach

Behaviorism emerged early in the 20th century and became a significant force in American psychology. The **behavioral approach** suggests that the keys to understanding development are observable behavior and external stimuli in the environment. Behaviorism is a theory of learning, and learning theories focus on how we are conditioned to respond to events or stimuli. These theories explain how experience determines behavior.

Championed by psychologists such as John B. Watson (1878–1958) and B. F. Skinner (1904–1990), behaviorism rejected any reference to mind and viewed overt and observable behavior as the proper subject matter of psychology. Through the scientific study of behavior, it was hoped that laws of learning could be derived that would promote the prediction and control of behavior. Russian physiologist Ivan Pavlov (1849–1936) influenced early behaviorism in America. His work on conditioned learning, popularly referred to as classical conditioning, provided support for the notion that learning and behavior were controlled by events in the environment and could be explained with no reference to mind or consciousness (Fancher, 1987).

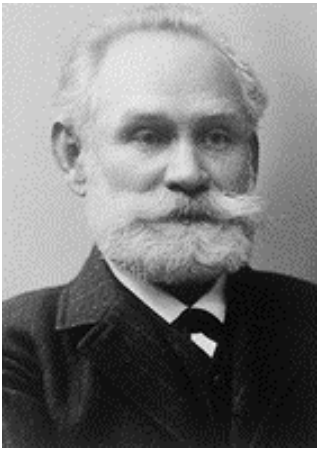


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Video 1. *How to Train a Brain* explains behaviorist theories of classical and operant conditioning.

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Pavlov's Classical Conditioning



Early work in the field of behavior was conducted by the Russian physiologist Ivan Pavlov (1849–1936). Pavlov studied a form of learning behavior called a conditioned reflex, in which an animal or human produced a reflex (unconscious) response to a stimulus and, over time, was conditioned to produce the response to a different stimulus than the experimenter associated with the original stimulus. The reflex Pavlov worked with was salivation in response to the presence of food. The salivation reflex could be elicited using a second stimulus, such as a specific sound, that was presented in association with the initial food stimulus several times. Once the response to the second stimulus was "learned," the food stimulus could be omitted. Pavlov's "classical conditioning" is only one form of learning behavior studied by behaviorists.

Figure 1. Ivan Pavlov

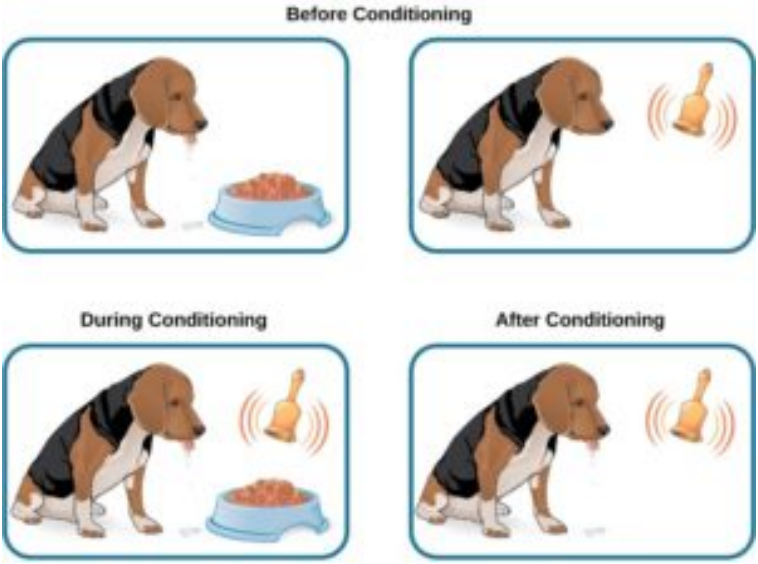


Figure 2. Before conditioning, an unconditioned stimulus (food) produces an unconditioned response (salivation), and a neutral stimulus (bell) does not produce a response. During conditioning, the unconditioned stimulus (food) is presented repeatedly just after the presentation of the neutral stimulus (bell). After conditioning, the neutral stimulus alone produces a conditioned response (salivation), thus becoming a conditioned stimulus.

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Video 2. *Classical Conditioning* explains the process used in classical learning.

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Watson and Behaviorism



John B. Watson (1878–1958) was an influential American psychologist whose most famous work occurred during the early 20th century at Johns Hopkins University. Watson thought that the study of consciousness was flawed because objective analysis of the mind was impossible. Watson preferred to focus directly on observable behavior and try to bring that behavior under control. Watson was a major proponent of shifting the focus of psychology from the mind to behavior, and this approach of observing and controlling behavior, and is considered the father of **behaviorism**. A significant object of study by behaviorists was learned behavior and its interaction with inborn qualities of the

organism. Behaviorism commonly used animals in experiments under the assumption that what was learned using animal models could, to some degree, be applied to human behavior. Indeed, Tolman (1938) stated, "I believe that everything important in psychology (except … such matters as involve society and words) can be investigated in essence through the continued experimental and theoretical analysis of the determiners of rat behavior at a choice-point in a maze."

Figure 3. John B. Watson

Behaviorism dominated experimental psychology for several decades, and its influence can still be felt today (Thorne & Henley, 2005). Behaviorism is largely responsible for establishing psychology as a scientific discipline through its objective methods and especially experimentation. In addition, this approach is used in behavioral and cognitive-behavioral therapy. Behavior modification is commonly used in classroom settings. Behaviorism has also led to research on environmental influences on human behavior.

Skinner and Operant Conditioning

B. F. Skinner (1904–1990) was an American psychologist. Like Watson, Skinner was a behaviorist, and he concentrated on how behavior was affected by its consequences. Therefore, Skinner spoke of reinforcement and punishment as major factors in driving behavior. As a part of his research, Skinner developed a chamber that allowed the careful study of the principles of modifying behavior through reinforcement and punishment. This device, known as an operant conditioning chamber (or more familiarly, a Skinner box), has remained a crucial resource for researchers studying behavior (Thorne & Henley, 2005).

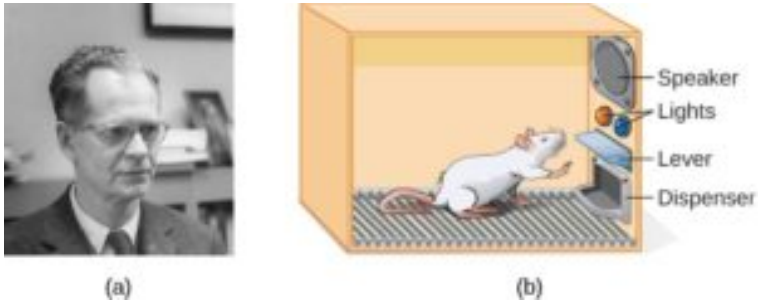


Figure 4. (a) B. F. Skinner is famous for his research on operant conditioning. (b) Modified versions of the operant conditioning chamber, or Skinner box, are still widely used in research settings today.

The Skinner box is a chamber that isolates the subject from the external environment and has a behavior indicator such as a lever or a button. When the animal pushes the button or lever, the box can deliver a positive reinforcement of the behavior (such as food) or a punishment (such as noise) or a token conditioner (such as a light) that is correlated with either the positive reinforcement or punishment.

Skinner's focus on positive and negative reinforcement of learned behaviors had a lasting influence in psychology that has waned somewhat since the growth of research in cognitive psychology. Despite this, conditioned learning is still used in human behavioral modification. Skinner's two widely read and controversial popular science books about the value of operant conditioning for creating happier lives remain as thought-provoking arguments for his approach (Greengrass, 2004).



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Video 3. *Operant Conditioning explains the various types of consequences that influence behavior.*



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Social Learning Theory: Observational Learning

Albert Bandura's ideas about learning were different from those of strict behaviorists. Bandura proposed a brand of behaviorism called **social learning theory**, which took cognitive processes and social contexts into account; it takes into consideration the dynamic and reciprocal interaction of the person, environment, and behavior. According to Bandura, pure behaviorism could not explain why learning can take place in the absence of external reinforcement. He felt that internal mental processes, like thinking and motivation, must also have a role in learning.

Observational learning is a component of Albert Bandura's Social Learning Theory (Bandura, 1977). In **observational learning**, we learn by watching others and then imitating, or modeling, what

they do or say. The individuals performing the imitated behavior are called **models**. Bandura identified three kinds of models: live, verbal, and symbolic. A live model demonstrates a behavior in person. A verbal instructional model does not perform the behavior but instead explains or describes the behavior. A symbolic model demonstrates behavior in forms of media.

Of course, we do not learn a behavior by merely observing a model. Bandura described specific steps in the process of modeling that must be followed if learning is to be successful: attention, retention, reproduction, and motivation. First, you must be focused on what the model is doing—you have to pay attention. Next, you must be able to retain, or remember, what you observed; this is retention. Then, you must be able to perform the behavior that you observed and committed to memory; this is reproduction. Finally, you must have motivation. You need to want to copy the behavior, and whether or not you are motivated depends on what happened to the model. If you saw that the model was reinforced for her behavior, you will be more motivated to copy her. This is known as **vicarious reinforcement**. On the other hand, if you observed the model being punished, you would be less motivated to copy her. This is called **vicarious punishment**.



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Video 4. *Albert Bandura Bobo Doll Experiment* explains how learning occurs through observation and demonstrates this through his Bobo doll experiment with preschool children.



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Humanistic Approach

During the early 20th century, American psychology was dominated by behaviorism and psychoanalysis. However, some psychologists were uncomfortable with what they viewed as limited perspectives being so influential to the field. They objected to the pessimism and determinism (all actions driven by the unconscious) of Freud. They also disliked the reductionism, or simplifying nature, of behaviorism. Behaviorism is also deterministic at its core because it sees human behavior as entirely determined by a combination of genetics and the environment. Some psychologists began to form their own ideas that emphasized personal control, intentionality, and a true predisposition for "good" as necessary for our self-concept and our behavior. Thus, humanism emerged. **Humanism** is a perspective within psychology that emphasizes the potential for good that is innate to all humans. Two of the most well-known proponents of humanistic psychology are Abraham Maslow and Carl Rogers (O'Hara, n.d.).



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Video 1. *Humanistic Theory* explained.



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Maslow's Hierarchy of Needs

Abraham Maslow (1908–1970) was an American psychologist who is best known for proposing a hierarchy of human needs in motivating behavior (figure below). Maslow asserted that so long as basic needs necessary for survival were met (e.g., food, water, shelter), higher-level needs (e.g., social needs) would begin to motivate behavior. According to Maslow, the highest-level needs relate to self-actualization, a process by which we achieve our full potential. The focus on the positive aspects of human nature that are characteristic of the humanistic perspective is evident (Thorne & Henley, 2005).



Figure 1. Maslow's hierarchy of needs.

Humanistic psychologists rejected, on principle, the research approach based on reductionist experimentation in the tradition of the physical and biological sciences, because it missed the "whole" human being. Beginning with Maslow and Rogers, there was an insistence on a humanistic research program. This program has been mostly qualitative (not measurement-based), but there exist a number of quantitative research strains within humanistic psychology, including research on happiness, self-concept,

meditation, and the outcomes of humanistic psychotherapy (Friedman, 2008).



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Video 2. *Maslow's Hierarchy of Needs* explained.



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Cognitive Approach

Behaviorism's emphasis on objectivity and focus on external behavior had pulled psychologists' attention away from the mind for a prolonged time. The early work of the humanistic psychologists redirected attention to the individual human as a whole, and as a conscious and self-aware being. By the 1950s, new disciplinary perspectives in linguistics, neuroscience, and computer science were emerging, and these areas revived interest in the mind as a focus of scientific inquiry. This particular perspective has come to be known as the cognitive revolution (Miller, 2003). By 1967, Ulric Neisser published the first textbook entitled *Cognitive Psychology*, which served as a core text in cognitive psychology courses around the country (Thorne & Henley, 2005).

Although no one person is entirely responsible for starting the cognitive revolution, Noam Chomsky was very influential in the early days of this movement. Chomsky (1928–), an American linguist, was dissatisfied with the influence that behaviorism had had on psychology. He believed that psychology's focus on behavior was short-sighted and that the field had to re-incorporate mental functioning into its purview if it were to offer any meaningful contributions to understanding behavior (Miller, 2003).

European psychology had never really been as influenced by behaviorism as had American psychology, and thus, the cognitive revolution helped reestablish lines of communication between European psychologists and their American counterparts. Furthermore, psychologists began to cooperate with scientists in other fields, like anthropology, linguistics, computer science, and neuroscience, among others. This interdisciplinary approach often was referred to as the cognitive sciences, and the influence and prominence of this particular perspective resonates in modern-day psychology (Miller, 2003). Today, the **cognitive approach** is the area

of psychology that focuses on studying cognitions, or thoughts, and their relationship to our experiences and our actions.

Cognitive psychologists have research interests that span a spectrum of topics, ranging from attention to problem-solving to language to memory. The approaches used in studying these topics are equally diverse. Given such diversity, cognitive psychology is not captured in one chapter of this text per se; rather, various concepts related to cognitive psychology will be covered in relevant portions of the chapters in this text on sensation and perception, thinking and intelligence, memory, lifespan development, social psychology, and therapy.



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Piaget's Psychological Constructivism

Jean Piaget (1896–1980) is another stage theorist who studied childhood development. Instead of approaching development from a psychoanalytical or psychosocial perspective, Piaget focused on children's cognitive growth. He believed that thinking is a central aspect of development and that children are naturally inquisitive. However, he said that children do not think and reason like adults (Piaget, 1930, 1932). His theory of cognitive development holds that our cognitive abilities develop through specific stages, which exemplifies the discontinuity approach to development. As we

progress to a new stage, there is a distinct shift in how we think and reason.



Piaget believed that we are continuously trying to maintain cognitive equilibrium or a balance or cohesiveness in what we see and what we know. Children have much more of a challenge in maintaining this balance because they are continually being confronted with new situations, new words, new objects, etc. When faced with something new, a child may either fit it into an existing framework (**schema**) and match it with something known (**assimilation**) such as calling all animals with four legs "doggies" because he or she knows the word doggie, or expand the framework of knowledge to accommodate the new situation (**accommodation**) by learning a new word to more accurately name the animal. This is the underlying dynamic in our cognition. Even as adults, we continue to try and make sense of new situations by determining whether they fit into our old way of thinking or whether we need to modify our thoughts.

As we mature and develop our schemas, we move through four distinct stages of cognitive development. Piaget proposed that specific developmental tasks were to be mastered during each stage, and as children progressed, they became more cognitively sophisticated.

Figure 1. Jean Piaget



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Table 1. Piaget's stages of cognitive development

Age	Stage	Description of Cognitive Development	Major Developmental Tasks
Infancy(0-2 years)	Sensorimotor	Take in sensory information and respond through motor activity. Motor responses begin as reflexes, become purposeful, and then become more sophisticated in response to sensory information.	• Master object permanence· • Learn to use symbols, images, and words to represent objects and thoughts· • Develop a sense of "self" separate from others
Preschool(2-7 years)	Pre-Operational	Display of intelligent thought. Children attempt to understand and explain their world but will make many errors in their assessments.	• Correct errored thinking· • Overcome egocentric perspective
Elementary School(7-11 years)	Concrete Operational	Children use operations (internal operations) to think logically and systematically. Operations allow the mental manipulation of information.	• Master conservation· • Understand reversibility· • Spontaneously classify information/ objects· • Understand deception

Adolescence (11+ years)	Formal Operational	Teens and adults develop systematic, logical algorithms for thinking through problems.	• Capable of abstract thought· • Thinking about hypotheticals· • Tends to be idealistic

As with other major contributors to theories of development, several of Piaget's ideas have come under criticism based on the results of further research. For example, several contemporary studies support a model of development that is more continuous than Piaget's discrete stages (Courage & Howe, 2002; Siegler, 2005, 2006). Many others suggest that children reach cognitive milestones earlier than Piaget describes (Baillargeon, 2004; de Hevia & Spelke, 2010). Looking across cultures reveals considerable variation in what children are able to do at various ages, and Piaget may have underestimated what children are capable of given the right circumstances.

According to Piaget, the highest level of cognitive development is formal operational thought, which develops between 11 and 20 years old. However, many developmental psychologists disagree with Piaget, suggesting a fifth stage of cognitive development, known as the postformal stage (Basseches, 1984; Commons & Bresette, 2006; Sinnott, 1998). In postformal thinking, decisions are made based on situations and circumstances, and logic is integrated with emotion as adults develop principles that depend on contexts. One way that we can see the difference between an adult in postformal thought and an adolescent (or adult) in formal operations is in terms of how they handle emotionally charged issues or integrate systems of thought.

Information-Processing Theories

Information-processing theories have become an influential alternative to Piaget's approach. The theory assumes that even complex behavior such as learning, remembering, categorizing, and thinking can be broken down into a series of individual, specific steps, and as a person develops strategies for processing information, they can learn more complex information. This perspective equates the mind to a computer, which is responsible for analyzing information from the environment.

The most common information-processing model is applied to an understanding of memory and the way that information is encoded, stored, and then retrieved from the brain (Atkinson & Shiffrin, 1968), but information processing approaches also apply to cognitive processing in general. According to the standard information-processing model for mental development, the mind's machinery includes attention mechanisms for bringing information in, working memory for actively manipulating information, and long-term memory for passively holding information so that it can be used in the future.

This theory addresses how, as children grow, their brains likewise mature, leading to advances in their ability to process and respond to the information they received through their senses. The theory emphasizes a continuous pattern of development, in contrast with cognitive-developmental theorists such as Piaget, who thought development occurred in stages. Developmental psychologists who adopt the information-processing perspective account for mental development in terms of maturational changes in basic components of a child's mind. At the same time, they do not offer a complete explanation of behavior. For example, they have paid little attention to behavior such as creativity, in which the most profound ideas often are developed in a seemingly not logical, nonlinear manner. Moreover, they do not take into account the social context in which development takes place.

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link to learning

View a brief video recapping some of the major concepts explored by cognitive psychologists.

Contextual Approach

The **contextual approach** considered the relationship between individuals and their physical, cognitive, and social worlds. They also examine socio-cultural and environmental influences on development. We will focus on two influential theorists who pioneered this perspective: Lev Vygotsky and Urie Bronfenbrenner. Lev Vygotsky was a Russian psychologist who is best known for his sociocultural theory. He believed that social interaction plays a critical role in children's learning; through such social interactions, children go through a continuous process of scaffolded learning. Urie Bronfenbrenner developed the ecological systems theory to explain how everything in a child and the child's environment affects how a child grows and develops. He labeled different aspects or levels of the environment that influence children's development.



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Vygotsky's Sociocultural Theory



Figure 1. Lev Vygotsky, founder of the sociocultural theory, which emphasizes contextual factors in cognitive development

Modern social learning theories stem from the work of Russian psychologist Lev Vygotsky (Kozulin, 1990). Vygotsky's ideas are most recognized for identifying the role of social interactions and culture in the development of higher-order thinking skills. His theory is especially valuable for the insights it provides about the dynamic "interdependence between individual and social processes in the construction of knowledge" (John-Steiner & Mahn, 1996, p. 192). Vygotsky's views are often considered primarily as cognitive development theories, focusing on qualitative changes in the

development of thought, language, and higher-order thinking skills. Although Vygotsky's intent was mainly to understand higher psychological processes in children, his ideas have many implications and practical applications for learners of all ages.

Three themes are often identified with Vygotsky's ideas of sociocultural learning: (1) human development and learning originate in social, historical, and cultural interactions, (2) use of psychological tools, particularly language, mediate development of higher mental functions, and (3) learning occurs within the Zone of Proximal Development. While we discuss these ideas separately, they are closely interrelated, non-hierarchical, and connected.

Vygotsky's **sociocultural theory** emphasizes the importance of culture and interaction in the development of cognitive abilities. Vygotsky contended that thinking has social origins, social interactions play a critical role, especially in the development of higher-order thinking skills, and cognitive development cannot be fully understood without considering the social and historical context within which it is embedded. He explained, "Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first between people (interpsychological) and then inside the child (intrapsychological)" (Vygotsky, 1978, p. 57). It is through working with others on a variety of tasks that a learner adopts socially shared experiences and associated effects and acquires useful strategies and knowledge (Scott & Palincsar, 2013).

Rogoff (1990) refers to this process as guided participation, where a learner actively acquires new culturally valuable skills and capabilities through a meaningful, collaborative activity with an assisting, more experienced other. It is critical to notice that these culturally mediated functions are viewed as being embedded in sociocultural activities rather than being self-contained. Development is a "transformation of participation in a sociocultural activity," not a transmission of discrete cultural knowledge or skills (Matusov, 2015, p. 315).



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Scaffolding and the Zone of Proximal Development

Vygotsky differed with Piaget in that he believed that a person has not only a set of abilities but also a set of potential abilities that can be realized if given the proper guidance from others. He believed that through guided participation known as **scaffolding**, with a teacher or capable peer, a child could learn cognitive skills within a certain range known as the **zone of proximal development**. While Piaget's ideas of cognitive development assume that development through certain stages is biologically determined, originates in the individual, and precedes cognitive complexity, Vygotsky presents a different view in which learning drives development. The idea of learning driving development, rather than being determined by the developmental level of the learner, fundamentally changes our understanding of the learning process and has significant instructional and educational implications (Miller, 2011).

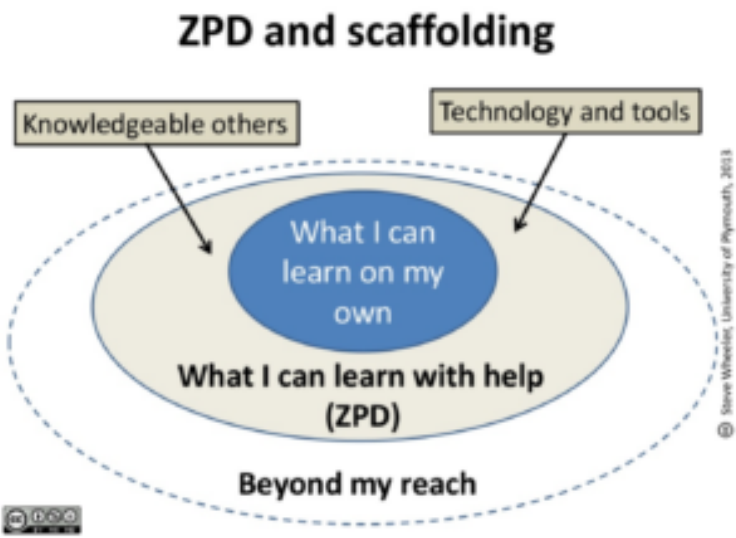


Figure 2. Model of zone of proximal development.

Have you ever taught a child to perform a task? Maybe it was brushing their teeth or preparing food. Chances are you spoke to them and described what you were doing while you demonstrated the skill and let them work along with you throughout the process. You assisted them when they seemed to need it, but once they knew what to do-you stood back and let them go. This is scaffolding. Educators have also adopted this approach to teaching. Rather than assessing students on what they are doing, they should be understood in terms of what they are capable of doing with the proper guidance.

This difference in assumptions has significant implications for the design and development of learning experiences. If we believe as Piaget did that development precedes learning, then we will make sure that new concepts and problems are not introduced until learners have developed innate capabilities to understand them. On the other hand, if we believe as Vygotsky did that learning drives

development and that development occurs as we learn a variety of concepts and principles, recognizing their applicability to new tasks and new situations, then our instructional design will look very different.



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Video 1. *Vygotsky's Sociocultural Development* explains the influence of the social environment on cognition and how more knowledgeable others help us learn within our zone of proximal development.

Bronfenbrenner's Ecological Systems Theory

Another psychologist who recognized the importance of the environment on development was American psychologist Urie Bronfenbrenner (1917-2005), who formulated the **ecological systems theory** to explain how the inherent qualities of a child and their environment interact to influence how they will grow and develop. The term "ecological" refers to a natural environment; human development is understood through this model as a long-lasting transformation in the way one perceives and deals with the environment. Bronfenbrenner's ecological theory stresses the importance of studying children in the context of multiple environments because children typically find themselves enmeshed simultaneously in different ecosystems. Each of these systems

inevitably interacts with and influence each other in every aspect of the child's life, from the most intimate level to the broadest. Furthermore, he eventually renamed his theory the **bioecological model** in order to recognize the importance of biological processes in development. However, he only recognized biology as producing a person's potential, with this potential being realized or not via environmental and social forces.

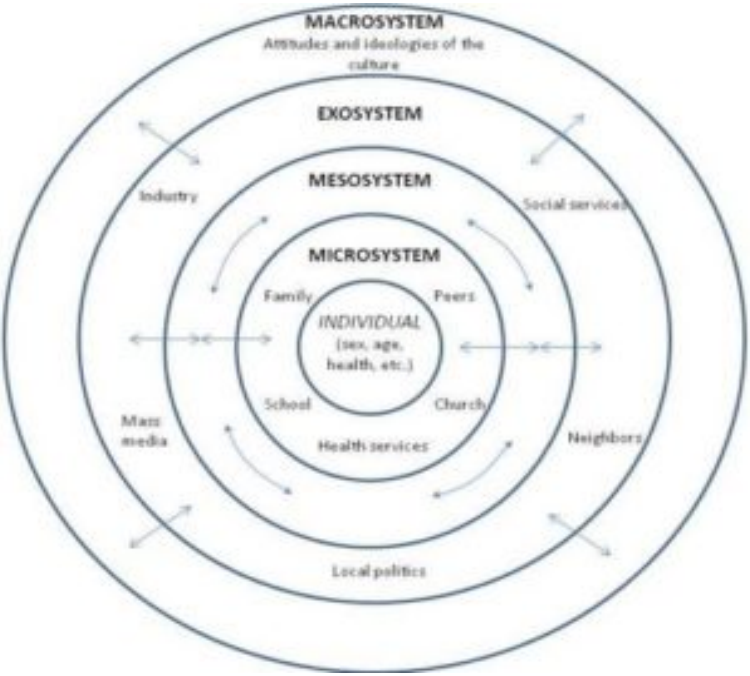


Figure 3. Bronfenbrenner's ecological theory emphasizes the influence of microsystems, mesosystems, exosystems, and macrosystems on an individual. Not pictured is the chronosystem, or the historical context and timeframe which provides the context for all the other systems. The chronosystem includes environmental events, major life transitions, and historical events.

An individual is impacted by **microsystems** such as parents or

siblings–those who have direct, significant contact with the person. The input of those people is modified by the cognitive and biological state of the individual as well. These influence the person's actions, which in turn influence systems operating on them. The **mesosystem** includes larger organizational structures such as school, the family, or religion. These institutions impact the microsystems just described. For example, the religious teachings and traditions of a family may create a climate that makes the family feel stigmatized, and this indirectly impacts the child's view of themself and others. The philosophy of the school system, daily routine, assessment methods, and other characteristics can affect the child's self-image, growth, sense of accomplishment, and schedule, thereby impacting the child physically, cognitively, and emotionally. These mesosystems both influence and are influenced by the broader contexts of the community, referred to as the **exosystem**. A community's values, history, and economy can impact the organizational structures it houses. Furthermore, the community is influenced by **macrosystems**, which are cultural elements such as global economic conditions, war, technological trends, values, philosophies, and society's responses to the global community. In sum, a child's experiences are shaped by larger forces such as family, school, religion, and culture. All of this occurs within the relevant historical context and timeframe, or **chronosystem**. The chronosystem is made up of the environmental events and transitions that occur throughout a child's life, including any socio-historical events. This system consists of all the experiences that a person has had during their lifetime.



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Video 1. *Bronfenbrenner's Ecological Theory* explains the various layers, the interactions between them, and the influence this has on individual development.



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Biopsychology and Evolutionary Psychology

Biopsychology

As the name suggests, **biopsychology** explores how our biology influences our behavior. While biological psychology is a broad field, many biological psychologists want to understand how the structure and function of the nervous system are related to behavior (figure below). As such, they often combine the research strategies of both psychologists and physiologists to accomplish this goal (as discussed in Carlson, 2013). A developmental psychologist would be interested in how these physiological systems impact development and how these systems grow and change over time.

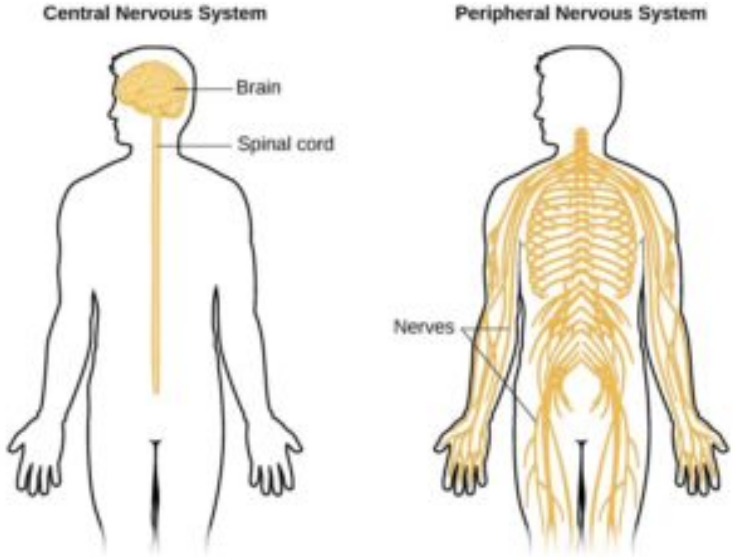


Figure 1. Biological psychologists study how the structure and function of the nervous system generate behavior.

Evolutionary Psychology

While biopsychology typically focuses on the immediate causes of behavior based on the physiology of a human or other animals, evolutionary psychology seeks to study the ultimate biological causes of behavior. To the extent that behavior is impacted by genetics, a behavior, like any anatomical characteristic of a human or animal, will demonstrate adaption to its surroundings. These surroundings include the physical environment, and since interactions between organisms can be critical to survival and reproduction, the social environment. The study of behavior in the context of evolution has its origins with Charles Darwin, the co-discoverer of the theory of evolution by natural selection. Darwin predicted that psychology would develop an evolutionary basis and that a process of natural selection creates traits in a species that are adaptive to its environment. For example, some evolutionary developmental psychologists suggest that behavior such as shyness and jealousy may be produced in part by genetic causes, presumably because they helped increase the survival rates of human's ancient relatives (Buss, 2012; Easton et al., 2007).

Evolutionary psychology has seen a resurgence in recent decades. To be subject to evolution by natural selection, behavior must have a significant genetic cause. In general, we expect all human cultures to express a behavior if it is caused genetically since the genetic differences among human groups are small. The approach taken by most evolutionary psychologists is to predict the outcome of a behavior in a particular situation based on evolutionary theory and then to make observations, or conduct experiments, to determine whether the results match the theory. It is important to recognize that these types of studies are not strong evidence that a behavior

is adaptive since they lack information that the behavior is, in some part, genetic and not entirely cultural (Endler, 1986). Demonstrating that a trait, especially in humans, is naturally selected is extraordinarily challenging; perhaps, for this reason, some evolutionary psychologists are content to assume the behaviors they study have genetic determinants (Confer et al., 2010).



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Video 1. *Evolution and Human Culture* explains how evolutionary theory can be applied to behavior and society.



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Comparing Contemporary Approaches

Developmental theories provide a set of guiding principles that describe, predict, and explain development. Some developmental theories focus on the formation of a particular quality, such as Piaget's theory of cognitive development. Other theories focus on growth that happens throughout the lifespan, such as Erikson's theory of psychosocial development. It would be natural to wonder which of the perspectives provides the most accurate account of human development, but clearly, each perspective is based on its specific premises and focuses on different aspects of development. Many developmentalists use an eclectic approach, drawing on several perspectives at the same time because the same developmental phenomenon can be looked at from several perspectives. In Table 1, we will review major contemporary approaches that you learned about in this chapter and compare their perspectives on some of the key issues in developmental psychology.

Table 1. Comparison of major contemporary approaches in development

Theory	Major ideas	Continuous or discontinuous development?	One course of development or many?	More natur
Psychodynamic Approach	Behavior is motivated by inner forces, memories, and conflicts, influenced by unconscious mind and early childhood experiences.	Discontinuous; there are distinct stages of development	One course; stages are universal for everyone	Both; impul childh socio exper
Behavioral Approach	Learning by the association of a response with a stimulus; a person comes to respond in a particular way through conditioning	Continuous; learning is ongoing without distinct stages	Many courses; learned behaviors vary by person	Mostl behav condi
Cognitive Approach	People gradually acquire, construct, and use knowledge and information, influencing behavior and development.	Both; stage theories like Piaget are discontinuous & information processing is continuous	One course; stages are universal for everyone	Both; matu with grow
Humanistic Approach	Individual's inherent drive towards self-actualization & contend that people have a natural capacity to make decisions about their lives and control their own behavior.	Continuous; development is ongoing and multidirectional depending on environmental circumstances	Mostly one course; Maslow's hierarchy is universally applied, but self-actualization is individualized	Mostl nurtu is infl envir circu social
Contextual or Sociocultural Approach	Development occurs within a social context as part of a cultural system.	Both, but mostly continuous as an individual learns and progresses	Many courses; there are variations between individuals and cultures	Both; influe by bi prepa social

Biological Approach	Physiological functions, like the central nervous system and hormones, affect behavior and development.	Continuous; constant changes to the body affect changes in development	Both; there are universal milestones for growth, but variations due to environment	Both; a four devel nurtu inhibi
Evolutionary psychology Approach	Identify behavior that is a result of our genetic inheritance from our ancestors.	Continuous; current behaviors have been shaped over multiple generations based on successful survival and reproduction	Both; behavioral genetics show similarities across the species, but our unique family history also plays a role in development	Both; histor impul with to pro devel devel the h futur

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Glossary

accommodation: a term developed by psychologist Jean Piaget to describe what occurs when new information or experiences cause you to modify your existing schemas

assimilation: a cognitive process that manages how we take in new information and incorporate that new information into our existing knowledge

behavioral approach: the approach that suggests that the keys to understanding development are observable behavior and outside stimuli in the environment

bioecological model: the perspective suggesting that multiple levels of the environment interact with biological potential to influence development

chronosystem: the environmental events and transitions that occur throughout a child's life, including any socio-historical events

classical conditioning: a type of learning in which an organism responds in a particular way to a neutral stimulus that normally does not bring about that type of response

cognitive approach: an approach that focuses on the process that allows people to know, understand and think about the world

concrete operational stage: the stage in which children can think logically about real (concrete) events, have a firm grasp on the use of numbers and start to employ memory strategies, lasts from about 7 to 11 years old

conservation: the idea that even if you change the appearance of something, it is still equal in size as long as nothing has been removed or added, usually develops during the concrete operational stage

contextual approach: a theory that considers the relationship between individuals and their physical, cognitive, and social worlds

ecological systems theory: Urie Bronfenbrenner's theory stressing the importance of studying a child in the context of

multiple environments, organized into five levels of external influence: microsystem, mesosystem, exosystem, macrosystem, and chronosystem

exosystem: the larger contexts of the community, including the values, history, and economy

evolutionary psychology: a field of study that seeks to identify behavior that is a result of our genetic inheritance from our ancestors

formal operational stage: the fourth, and last, stage in Piaget's theory and lasts from about age 11 to adulthood. Children in the formal operational stage can deal with abstract ideas and hypothetical situations

humanism: a psychological theory that emphasizes an individual's inherent drive towards self-actualization and contends that people have a natural capacity to make decisions about their lives and control their own behavior

hypothesis: a testable prediction

information-processing approach: an alternative to Piagetian approaches, a model that seeks to identify the ways individual take in, use, and store information

law of effect: behavior that is followed by consequences satisfying to the organism will be repeated, and behaviors that are followed by unpleasant consequences will be discouraged

macrosystem: cultural elements such as global economic conditions, war, technological trends, values, philosophies, and a society's responses to the global community which impact a community

Maslow's hierarchy of needs: a motivational theory in psychology comprising a five-tier model of human needs, often depicted as hierarchical levels within a pyramid. Needs lower down in the hierarchy must be satisfied before individuals are motivated to attend to needs higher up

mesosystem: larger organizational structures such as school, the family, or religion

microsystem: immediate surrounds including those who have

direct, significant contact with the person, such as parents or siblings

neurosis: a tendency to experience negative emotions

operant conditioning: a form of learning in which a voluntary response is strengthened or weekend by its association with positive or negative consequences

Piaget theory of cognitive development: a description of cognitive development as four distinct stages in children: sensorimotor, preoperational, concrete, and formal

psychodynamic approach: the perspective that behavior is motivated by inner forces, memories, and conflicts that are generally beyond people's awareness and control

psychosocial theory: the theory that emphasizes that social relationships that are important at each stage of personality development

reciprocal determinism: the interplay between our personality and the way we interpret events and how they influence us

reversibility: objects can be changed and then returned to their original form or condition, typically observed during the concrete operational stage

scaffolding: a process in which adults or capable peers model or demonstrate how to solve a problem, and then step back, offering support as needed

schemas: an existing framework for an object or concept

self-actualization: according to humanistic theory, the realizing of one's full potential can include creative expression, a quest for spiritual enlightenment, the pursuit of knowledge, or the desire to contribute to society. For Maslow, it is a state of self-fulfillment in which people achieve their highest potential in their own unique way

social learning theory: learning by observing the behavior of another person, called a model

sociocultural theory: Vygotsky's theory that emphasizes how cognitive development proceeds as a result of social interactions between members of a culture

theory: a well-developed set of ideas that propose an explanation for observed phenomena that can be used to make predictions about future observations

theory-of-mind (TOM): explains how children come to understand that people have thoughts, feelings, and beliefs that are different from their own, develops during the preoperational stage

zone of proximal development (ZPD): the difference between what a learner can do without help, and what they can do with help

PRENATAL DEVELOPMENT

Learning Objectives

- Describe genetic components of conception
- Describe genes and their importance in genetic inheritance
- Describe chromosomal abnormalities
- Explain the value of prenatal testing
- Describe the interaction between genetics and the environment
- Compare monozygotic and dizygotic twins
- Differentiate between development during the germinal, embryonic, and fetal periods
- Examine risks to prenatal development posed by exposure to teratogens
- Explain potential complications of pregnancy and delivery
- Describe various approaches to childbirth
- Describe a normal delivery, including the stages of childbirth
- Examine risks and complications with newborns

People endure quite an incredible journey before they are born. Think about it—when the timing and conditions are just right, a tiny egg releases from ovulation and a single sperm out of hundreds of millions unite to begin the process of fertilization. Genetic material from the mother and father join together to form a completely new organism. This new organism has to continue to travel and implant

in the uterine wall in order to continue to grow and thrive. It is not an easy feat. It still must grow and develop for approximately 268 days before it begins life outside of the womb.

Today we have more knowledge and technology than ever before that has an impact on this process. We are privy to tests that can give us a wealth of information even before we conceive. We have the ability to know the genetic make-up of a prenate before it is implanted in the womb. New parents have the choice of the prenatal care that they receive and how they want to prepare for labor and delivery. As you will see, the choices that are made along the way and the unforeseen surprises make for a unique pregnancy and birth story.

This chapter explores this journey and the development process from the moment of conception to delivery.

Watch It

Video 1. *Conception to Birth* shows fascinating animation of a prenate growing and developing inside of the womb.



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Biological Foundations of Human Development



In this section, we will look at some of the ways in which heredity helps to shape the way we are. Heredity involves more than genetic information from our parents. According to evolutionary psychology, our genetic inheritance comes from the most adaptive genes of our ancestors. We will look at what happens genetically during conception and take a brief look at some genetic abnormalities. Before going into these topics, however, it is important to emphasize the interplay between heredity and the environment. Why are you the way you are? As you consider some of your features (height, weight, personality, health, etc.), ask yourself whether these features are a result of heredity, or environmental factors, or both. Chances are, you can see the ways in which both heredity and environmental factors (such as lifestyle, diet, and so on) have contributed to these features.

Evolutionary Psychology



Figure 1. *Evolutionary psychology examines the connection between biological adaptation and preferences in mate selection.*

Evolutionary psychology focuses on how universal patterns of behavior and cognitive processes have evolved over time. Variations in cognition and behavior would make individuals more or less successful in reproducing and passing those genes to their offspring. Evolutionary psychologists study a variety of psychological phenomena that may have evolved as adaptations, including the fear response, food preferences, mate selection, and cooperative behaviors (Confer et al., 2010).

Many think of evolution as the development of traits and behaviors that allow us to survive this "dog-eat-dog" world, like strong leg muscles to run fast, or fists to punch and defend ourselves. However, physical survival is only important if it eventually contributes to successful reproduction. That is, even if you live to be 100 years old, if you fail to mate and produce children, your genes will die with your body. Thus, *reproductive* success, not *survival* success, is the engine of evolution by natural selection.

Charles Darwin describes this process in the **theory of evolution by natural selection**. In simple terms, the theory states that organisms that are better suited for their environment will survive and reproduce, while those that are poorly suited for their environment will die off. There is a growing interest in applying the principles of evolutionary psychology to better understand lifespan development in humans.

Lifespan Development and Evolutionary

Psychology

As we consider development from conception through the lifespan, there will be many opportunities to understand how evolutionary psychology enhances our understanding of development. For instance, women and men do differ in their preferences for a few key qualities in long-term mating, because of somewhat distinct adaptive concerns. Modern women have inherited the evolutionary trait to desire mates who possess resources, have qualities linked with acquiring resources (e.g., ambition, wealth, industriousness), and are willing to share those resources with them. On the other hand, men more strongly desire youth and health in women, as both are cues to fertility. These male and female differences have historically been universal in humans.

Just because a psychological adaptation was advantageous in our history, doesn't mean it's still useful today. For example, even though women may have preferred men with resources in previous generations, our modern society has advanced such that these preferences are no longer necessary. Nonetheless, it's important to consider how our evolutionary history has shaped our automatic or "instinctual" desires and reflexes of today so that we can better shape them for the future ahead.

As we follow the journey of life, from conception to death, think about how the theory of natural selection and the concepts of evolutionary psychology can enlighten our understanding of why some automatic reflexes or instinctual desires are more common than others. Remember that the end product of the theory of evolution by natural selection is successful survival and reproduction. Can you think of some ways that the ultimate goal of reproductive success affects our selection of a mate, how we parent young children, why we are motivated to achieve certain goals, or what differentiates families with traditionally longer lifespans? In order to achieve reproductive success, the theory of evolution by natural selection states that organisms should be suited to their

environment. Think about how different environments or cultures require different traits for successful survival and reproduction. Can you think of some ways that we may be changing to be better suited to our changing culture?

Link to Learning

David Buss is one of the leading researchers in evolutionary psychology. In David Buss' Ted Talk, he explains several theories related to the selection of sexual partners, mating preferences, and infidelity.

Heredity and Chromosomes

Heredity is the passing on of traits from parents to their offspring. For humans, through sexual reproduction, the offspring acquire the genetic information of their parents. Through heredity, variations between individuals can accumulate and cause species to evolve by natural selection.



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Video 1. *Heritability* explained.

Gametes

There are two types of sex cells or **gametes** involved in reproduction: the male gametes, or sperm, and female gametes, or ova. The male gametes are produced in the testes through a process called spermatogenesis, which begins at about 12 years of age. The female gametes, which are stored in the ovaries, are present at birth but are immature. Each ovary contains about 250,000 ova but only about 400 of these will become mature eggs (Mackon & Fauser, 2000; Rome, 1998). Beginning at puberty, one ovum ripens and is released about every 28 days, a process called oogenesis.

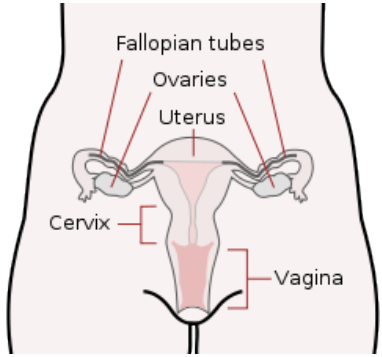


Figure 4.3.1. *The Female Reproductive System.*

After the ovum or egg ripens and is released from the ovary, it is drawn into the fallopian tube and in 3 to 4 days, reaches the uterus. It is typically fertilized in the fallopian tube and continues its journey to the uterus. At ejaculation, millions of sperm are released into the vagina, but only a few reach the egg and typically, only one fertilizes the egg. Once a single sperm has entered the wall of the egg, the wall becomes hard and prevents other sperm from entering. After the sperm has entered the egg, the tail of the sperm breaks off and the head of the sperm, containing the genetic information from the father, unites with the nucleus of the egg. As a result, a new cell is formed. This cell, containing the combined genetic information from both parents, is referred to as a zygote.

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Video 2. *Fertilization* shows how one single sperm survives the long and treacherous journey to fertilize the mother's egg.

Chromosomes

While other normal human cells have 46 chromosomes (or 23 pairs), gametes contain 23

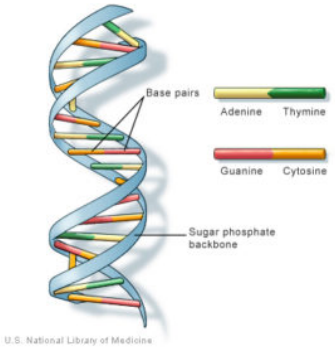


Figure 2. *Deoxyribonucleic acid (DNA) is a helix-shaped molecule made up of nucleotide base pairs. Sequences of DNA make up genes.*

chromosomes. **Chromosomes** are long threadlike structures found in a cell nucleus that contains genetic material known as **deoxyribonucleic acid (DNA)**. DNA is a helix-shaped molecule made up of nucleotide base pairs [adenine (A), guanine (G), cytosine (C), and thymine (T)]. In each chromosome, sequences of DNA make up **genes** that control or partially control a number of visible characteristics, known as traits, such as eye color, hair color, and so on. A single gene may have multiple possible variations or alleles. An **allele** is a specific version of a gene. So, a given gene may code for the trait of hair color, and the different alleles of that gene affect which hair color an individual has.

In a process called meiosis, segments of the chromosomes from each parent form pairs, and genetic segments are exchanged as determined by chance. Because of the unpredictability of this exchange, the likelihood of having offspring that are genetically identical (and not twins) is one in trillions (Gould & Keeton, 1997). Genetic variation is important because it allows a species to adapt so that those who are better suited to the environment will survive and reproduce, which is an important factor in natural selection.



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Video 3. *Meiosis* explained.

Genotypes and Phenotypes

When a sperm and egg fuse, their 23 chromosomes pair up and create a zygote with 23 pairs of chromosomes. Therefore, each parent contributes half the genetic information carried by the offspring; the resulting physical characteristics of the offspring (called the phenotype) are determined by the interaction of genetic material supplied by the parents (called the genotype). A person's **genotype** is the genetic makeup of that individual. **Phenotype,** on the other hand, refers to the individual's inherited physical characteristics.

Look in the mirror. What do you see, your genotype or your

phenotype? What determines whether or not genes are expressed? Actually, this is quite complicated. Some features follow the additive pattern which means that many different genes contribute to a final outcome. Height and skin tone are examples. In other cases, a gene might either be turned on or off depending on several factors, including the gene with which it is paired or the inherited epigenetic tags.

Determining the Sex of the Child

Twenty-two of those chromosomes from each parent are similar in length to a corresponding chromosome from the other parent. However, the remaining chromosome looks like an X or a Y. Half of the male's sperm contains a Y chromosome and half contain an X. All of the ova contain X chromosomes. If the child receives the combination of XY, the child will be genetically male. If it receives the XX combination, the child will be genetically female.

Many potential parents have a clear preference for having a boy or a girl and would like to determine the sex of the child. Through the years, a number of tips have been offered for potential parents to maximize their chances of having either a son or daughter as they prefer. For example, it has been suggested that sperm that carry a Y chromosome are more fragile than those carrying an X. So, if a couple desires a male child, they can take measures to maximize the chance that the Y sperm reaches the egg. This involves having intercourse 48 hours after ovulation, which helps the Y sperm have a shorter journey to reach the egg, douching to create a more alkaline environment in the vagina, and having the female reach orgasm first so that sperm are not pushed out of the vagina during orgasm. Today, however, there is new technology available that makes it possible to isolate sperm containing either an X or a Y, depending on the preference, and use that sperm to fertilize a mother's egg.

Genetic Variation and Inheritance

Genetic variation, the genetic difference between individuals, is what contributes to a species' adaptation to its environment. In humans, genetic variation begins with an egg, several million sperm, and fertilization. The egg and the sperm each contain 23 chromosomes, which make up our genes. A single gene may have multiple possible variations or alleles (a specific version of a gene), resulting in a variety of combinations of inherited traits.

Genetic inheritance of traits for humans is based upon Gregor Mendel's model of inheritance. For genes on an autosome (any chromosome other than a sex chromosome), the alleles and their associated traits are autosomal dominant or autosomal recessive. In this model, some genes are considered dominant because they will be expressed. Others, termed recessive, are only expressed in the absence of a dominant gene. Some characteristics which were once thought of as dominant-recessive, such as eye color, are now believed to be a result of the interaction between several genes (McKusick, 1998). Dominant traits include curly hair, facial dimples, normal vision, and dark hair. Recessive characteristics include red hair, pattern baldness, and nearsightedness.

DOMINANT AND RECESSIVE CHARACTERISTICS

Table 1. Characteristics in the left-hand column dominate over those characteristics listed in the right-hand column.

	DOMINANT TRAITS
eye coloring	brown eyes
vision	farsightedness normal vision normal vision normal vision
hair	dark hair non-red hair curly hair full head of hair widow's peak
facial features	dimples unattached earlobes freckles broad lips
appendages	extra digits fused digits short digits fingers lack 1 joint limb dwarfing clubbed thumb double-jointedness
other	immunity to poison ivy normal pigmented skin normal blood clotting normal hearing normal hearing and speaking normal- no PKU

Sickle cell anemia is an autosomal recessive disease; Huntington's disease is an autosomal dominant disease. Other traits are a result of partial dominance or co-dominance in which both genes are influential. For example, if a person inherits both recessive genes for cystic fibrosis, the disease will occur. But if a person has only one recessive gene for the disease, the person would be a carrier of the disease.

In this example, we will call the normal gene "N," and the gene for cystic fibrosis "c." The normal gene is dominant, which means

that having the dominant allele either from one parent (Nc) or both parents (NN) will always result in the phenotype associated with the dominant allele. When someone has two copies of the same allele, they are said to be **homozygous** for that allele. When someone has a combination of alleles for a given gene, they are said to be **heterozygous**. For example, cystic fibrosis is a recessive disease which means that an individual will only have the disease if they are homozygous for that recessive allele (cc).

Imagine that a woman who is a carrier of the cystic fibrosis gene has a child with a man who also is a carrier of the same disease. What are the odds that their child would inherit the disease? Both the woman and the man are heterozygous for this gene (Nc). We can expect the offspring to have a 25% chance of having cystic fibrosis (cc), a 50% chance of being a carrier of the disease (Nc), and a 25% chance of receiving two normal copies of the gene (NN).

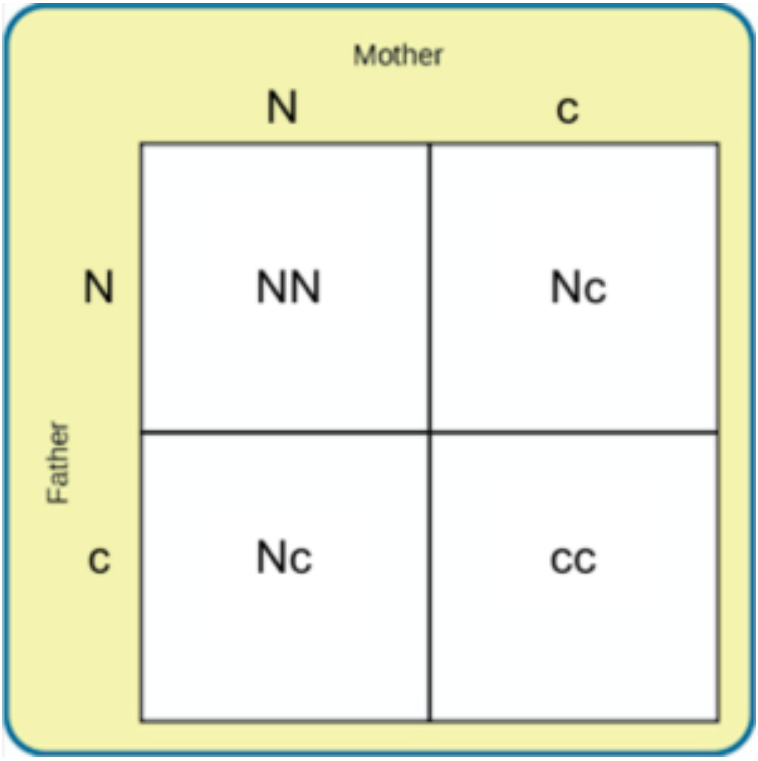


Figure 3. *A Punnett square is a tool used to predict how genes will interact in the production of offspring. The capital N represents the dominant allele, and the lowercase c represents the recessive allele. In the example of cystic fibrosis, where N is the normal gene (dominant allele), wherever a pair contains the dominant allele, N, you can expect a phenotype that does not express the disease. You can expect a cystic fibrosis phenotype only when there are two copies of the c (recessive allele) which contains the gene mutation that causes the disease.*

Where do harmful genes that contribute to diseases like cystic fibrosis come from? Gene mutations provide one source of harmful genes. A **mutation** is a sudden, permanent change in a gene. While many mutations can be harmful or lethal, once in a while a mutation benefits an individual by giving that person an advantage over those who do not have the mutation. Recall that the theory of evolution

asserts that individuals best adapted to their particular environments are more likely to reproduce and pass on their genes to future generations. In order for this process to occur, there must be competition—more technically, there must be variability in genes (and resultant traits) that allow for variation in adaptability to the environment. If a population consisted of identical individuals, then any dramatic changes in the environment would affect everyone in the same way, and there would be no variation in selection. In contrast, diversity in genes and associated traits allow some individuals to perform slightly better than others when faced with environmental change. This creates a distinct advantage for individuals best suited for their environments in terms of successful reproduction and genetic transmission.



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Video 4. *An Introduction to Mendelian Genetics* demonstrates another example of the interaction of alleles using the Punnett square.



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Sex-Linked Traits

Sex-linked traits are genes located on a sex chromosome (the 23rd pair). In humans, the term generally refers to traits that are influenced by genes on the X chromosome. This is because the X chromosome is large and contains many more genes than the smaller Y chromosome. In a sex-linked disease, it is usually males who are affected because they have a single copy of the X chromosome that carries the mutation. In females, the effect of the mutation may be masked by the second healthy copy of the X chromosome.

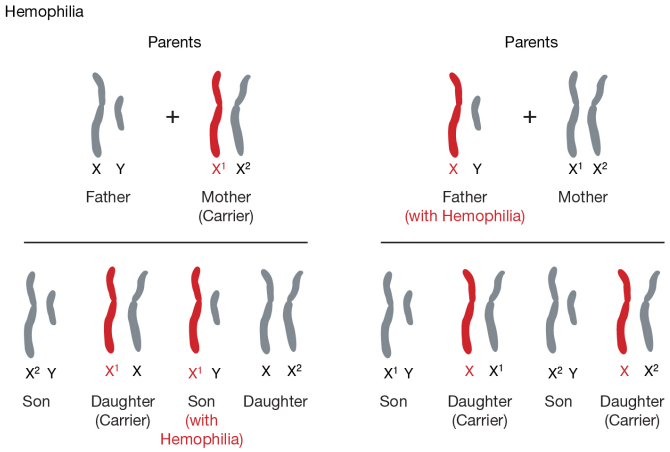


Figure 4. Hemophilia is an example of a sex-linked trait, as are color blindness, congenital night blindness, some high blood pressure genes, Duchenne muscular dystrophy, and also Fragile X syndrome. This exemplifies how the gene for hemophilia may be passed from one parent to their sons and daughters.

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Video 5. *Sex-Linked Traits* explains the traits carried on the 23rd pair of chromosomes and how these

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Chromosomal Abnormalities and Genetic Testing

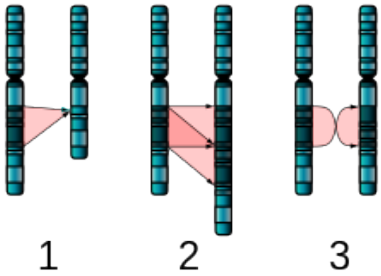


Figure 5. *The three major single-chromosome mutations: deletion (1), duplication (2), and inversion (3).*

A chromosomal abnormality occurs when a child inherits too many or too few chromosomes. The most common cause of chromosomal abnormalities is the age of the mother. A 20-year-old woman has a 1 in 800 chance of having a child with a common chromosomal abnormality. A woman of 44, however, has a one in 16 chance. It is believed that the problem occurs when the ovum is ripening prior to ovulation each month. As the mother ages, the ovum is more likely to suffer abnormalities at this time.

Another common cause of chromosomal abnormalities occurs because the gametes do not divide evenly when they are forming. Therefore, some cells have more than 46 chromosomes. In fact, it is believed that close to half of all zygotes have an odd number of chromosomes. Most of these zygotes fail to develop and are spontaneously aborted by the body. If the abnormal number occurs on pair # 21 or # 23, however, the individual may have certain physical or other abnormalities.

An altered chromosome structure may take several different forms, and result in various disorders or malignancies:

- *Deletions*: A portion of the chromosome is missing or deleted. Known disorders in humans include Wolf-Hirschhorn syndrome, which is caused by partial deletion of the short arm of chromosome 4; and Jacobsen syndrome, also called the terminal 11q deletion disorder.

- *Duplications*: A portion of the chromosome is duplicated, resulting in extra genetic material. Known human disorders include Charcot-Marie-Tooth disease type 1A, which may be caused by duplication of the gene encoding peripheral myelin protein 22 (PMP22) on chromosome 17.
- *Translocations*: A portion of one chromosome is transferred to another chromosome. There are two main types of translocations:
    - *Reciprocal translocation*: Segments from two different chromosomes have been exchanged.
    - *Robertsonian translocation*: An entire chromosome has attached to another at the centromere – in humans, these only occur with chromosomes 13, 14, 15, 21, and 22.

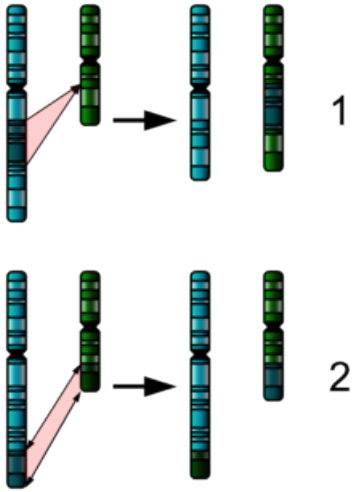


Figure 6. *The two major two-chromosome mutations: insertion (1) and Translocation (2).*

- *Inversions*: A portion of the chromosome has broken off, turned upside down, and reattached, therefore the genetic material is inverted.
- *Insertions*: A portion of one chromosome has been deleted from its normal place and inserted into another chromosome.
- *Rings*: A portion of a chromosome has broken off and formed a circle or ring. This can happen with or without loss of genetic material.
- *Isochromosome*: Formed by the mirror image copy of a chromosome segment including the centromere.

One of the most common chromosomal abnormalities is on pair

21. Trisomy 21 occurs when there are three rather than two chromosomes on #21. A person with Down syndrome has distinct facial features, intellectual disability, and oftentimes heart and gastrointestinal disorders. Symptoms vary from person to person and can range from mild to severe. With early intervention, the life expectancy of persons with Down syndrome has increased in recent years. Keep in mind that there is as much variation in people with Down Syndrome as in most populations and those differences need to be recognized and appreciated.

Watch It

Video 6. *Down Syndrome* ability awareness from the National Down Syndrome Society.

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When the chromosomal abnormality is on pair #23, the result is a sex-linked chromosomal abnormality. A person might have XXY, XYY, XXX, XO, or 45 or 47 chromosomes as a result. Two of the more common sex-linked chromosomal disorders are Turner syndrome and Klinefelter syndrome. Turner's syndrome occurs in 1 of every 2,500 live female births (Carroll, 2007) when an ovum

that lacks a chromosome is fertilized by a sperm with an X chromosome. The resulting zygote has an XO composition. Fertilization by a Y sperm is not viable. Turner syndrome affects cognitive functioning and sexual maturation. The external genitalia appears normal, but breasts and ovaries do not develop fully and the woman does not menstruate. Turner's syndrome also results in short stature and other physical characteristics. Klinefelter syndrome (XXY) occurs in 1 out of 700 live male births and results when an ovum containing an extra X chromosome is fertilized by a Y sperm. The Y chromosome stimulates the growth of male genitalia, but the additional X chromosome inhibits this development. An individual with Klinefelter syndrome has some breast development, infertility (this is the most common cause of infertility in males), and has low levels of testosterone.

Prenatal Testing

Prenatal testing consists of prenatal screening and prenatal diagnosis, which are aspects of prenatal care that focus on detecting problems with the pregnancy as early as possible. These may be anatomic and physiologic problems with the health of the zygote, embryo, or fetus, either before gestation even starts or as early in gestation as practical. **Prenatal screening** focuses on finding problems among a large population with affordable and noninvasive methods. The most common screening procedures are routine ultrasounds, blood tests, and blood pressure measurement. **Prenatal diagnosis** focuses on pursuing additional detailed information once a particular problem has been found, and can sometimes be more invasive.

Screening can detect problems such as neural tube defects, anatomical defects, chromosome abnormalities, and gene mutations that would lead to genetic disorders and birth

defects, such as spina bifida, cleft palate, Downs Syndrome, Tay–Sachs disease, sickle cell anemia, thalassemia, cystic fibrosis, muscular dystrophy, and fragile X syndrome. Some tests are designed to discover problems that primarily affect the health of the mother, such as PAPP-A to detect pre-eclampsia or glucose tolerance tests to diagnose gestational diabetes. Screening can also detect anatomical defects such as hydrocephalus, anencephaly, heart defects, and amniotic band syndrome.

Common prenatal diagnosis procedures include amniocentesis and chorionic villus sampling. Because of the miscarriage and fetal damage risks associated with amniocentesis and CVS procedures, many women prefer to first undergo screening so they can find out if the fetus' risk of birth defects is high enough to justify the risks of invasive testing. Screening tests yield a risk score which represents the chance that the baby has the birth defect; the most common threshold for high-risk is 1:270. A risk score of 1:300 would, therefore, be considered low-risk by many physicians. However, the trade-off between the risk of birth defects and risk of complications from invasive testing is relative and subjective; some parents may decide that even a 1:1000 risk of birth defects warrant an invasive test while others wouldn't opt for an invasive test even if they had a 1:10 risk score.

There are three main purposes of prenatal diagnosis: (1) to enable timely medical or surgical treatment of a condition before or after birth, (2) to give the parents the chance to abort a fetus with the diagnosed condition, and (3) to give parents the chance to prepare psychologically, socially, financially, and medically for a baby with a health problem or disability, or for the likelihood of stillbirth. Having this information in advance of birth means that healthcare staff, as well as parents, can better prepare themselves for the delivery of a child with a health problem. For example, Down Syndrome is associated with cardiac defects that may need intervention immediately upon birth.

The American College of Obstetricians and Gynecologists (ACOG) guidelines currently recommend that all pregnant women,

regardless of age, be offered invasive testing to obtain a definitive diagnosis of certain birth defects. Therefore, most physicians offer diagnostic testing to all their patients, with or without prior screening, and let the patient decide.

watch it

Video 7. *Screening in Pregnancy* provides more information about prenatal testing and screening during pregnancy.



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Behavioral Genetics

Behavioral geneticists study how individual differences arise, in the present, through the interaction of genes and the environment. When studying human behavior, behavioral geneticists often employ twin and adoption studies to research questions of interest. Twin studies compare the rates that a given behavioral trait is shared among identical and fraternal twins; adoption studies compare those rates among biologically related relatives and adopted relatives. Both approaches provide some insight into the relative importance of genes and environment for the expression of a given trait.

Nature or Nurture?

For decades, scholars have carried on the "nature/nurture" debate. For any particular feature, those on the "nature" side would argue that heredity plays the most important role in bringing about that feature. Those on the "nurture" side would argue that one's environment is most significant in shaping the way we are. This debate continues in questions about what makes us masculine or feminine (Lippa, 2002), concerns about vision (Mutti, Kadnik, & Adams, 1996), and many other developmental issues.

Most scholars agree that there is a constant interplay between the two forces. It is difficult to isolate the root of any single behavior as a result solely of nature or nurture, and most scholars believe that even determining the extent to which nature or nurture impacts a human feature is difficult to answer. In fact, almost all human features are polygenic (a result of many genes) and multifactorial (a result of many factors, both genetic and environmental). It is as if one's genetic make-up sets up a range of possibilities, which may or may not be realized depending upon one's environmental

experiences. For instance, a person might be genetically predisposed to develop diabetes, but the person's lifestyle may help bring about the disease.

When you think about your own family history, it is easy to see that there are certain personality traits, behavioral characteristics, and medical conditions that are more common than others. This is the reason that doctors ask you about your family medical history. While genetic predisposition is important to consider, there are some family members who, for a variety of reasons, seemed to defy the odds of developing these conditions. These differences can be explained in part by the effect of **epigenetic** (above the genome) changes.



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Video 1. *Epigenetics* explains some of the research that gives insights into the complicated relationship between nature and nurture.

The Epigenetic Framework

The term "epigenetic" has been used in developmental psychology to describe psychological development as the result of an ongoing, bi-directional interchange between heredity and the environment. Gottlieb (1998; 2000; 2002) suggests an analytic framework for the nature/nurture debate that recognizes the

interplay between the environment, behavior, and genetic expression. This bidirectional interplay suggests that the environment can affect the expression of genes just as genetic predispositions can impact a person's potentials. Likewise, environmental circumstances can trigger symptoms of a genetic disorder. For example, a person predisposed genetically for type 2 diabetes may trigger the disease through poor diet and little exercise.

The developmental psychologist Erik Erikson wrote of an *epigenetic principle* in his book *Identity: Youth and Crisis* (1968), encompassing the notion that we develop through an unfolding of our personality in predetermined stages, and that our environment and surrounding culture influence how we progress through these stages. This biological unfolding in relation to our socio-cultural settings is done in stages of psychosocial development, where "progress through each stage is in part determined by our success, or lack of success, in all the previous stages."

In typical human families, children's biological parents raise them, so it is very difficult to know whether children act like their parents due to genetic (nature) or environmental (nurture) reasons. Nevertheless, despite our restrictions on setting up human-based experiments, we do see real-world examples of nature-nurture at work in the human sphere—though they only provide partial answers to our many questions. The science of how genes and environments work together to influence behavior is called **behavioral genetics**. The easiest opportunity we have to observe this is the **adoption study**. When children are put up for adoption, the parents who give birth to them are no longer the parents who raise them. Children aren't assigned to random adoptive parents in order to suit the particular interests of a scientist but adoption still tells us some interesting things, or at least confirms some basic expectations. For instance, if the biological child of tall parents were adopted into a family of short people, do you suppose the child's growth would be affected? What about the biological child of a Spanish-speaking family adopted at

birth into an English-speaking family? What language would you expect the child to speak? And what might these outcomes tell you about the difference between height and language in terms of nature-nurture?

Monozygotic and Dizygotic Twins

Another option for observing nature-nurture in humans involves **twin studies**. To analyze nature–nurture using twins, we compare the similarity of monozygotic and dizygotic pairs. **Monozygotic** twins occur when a single zygote or fertilized egg splits apart in the first two weeks of development. The result is the creation of two separate but genetically identical offspring. About one-third of twins are monozygotic twins. Monozygotic twins occur in birthing at a rate of about 3 in every 1000 deliveries worldwide (about 0.3% of the world population). Monozygotic twins are genetically nearly identical and they are always the same sex unless there has been a mutation during development. The children of monozygotic twins test genetically as half-siblings (or full siblings, if a pair of monozygotic twins reproduces with another pair of identical twins or with the same person), rather than first cousins.

Sometimes two eggs or ova are released and fertilized by two separate sperm. The result is **dizygotic** or fraternal twins. About two-thirds of twins are dizygotic. These two individuals share the same amount of genetic material as would any two children from the same mother and father. Older mothers are more likely to have dizygotic twins than are younger mothers and couples who use fertility drugs are also more likely to give birth to dizygotic twins. Consequently, there has been an increase in the number of fraternal twins in recent years (Bortolus et al., 1999). In vitro fertilization (IVF) techniques are more likely to create dizygotic twins. For IVF deliveries, there are nearly 21 pairs of twins for every 1,000.

In the uterus, a majority of monozygotic twins (60–70%) share the same placenta but have separate amniotic sacs. The **placenta** is a temporary organ that connects the developing fetus via the umbilical cord to the uterine wall to allow nutrient uptake, thermo-regulation, waste elimination, and gas exchange via the mother's blood supply. The **amniotic sac** (also called the bag of waters or the membranes), is a thin but tough transparent pair of membranes that hold a developing embryo (and later fetus) until shortly before birth. In 18–30% of monozygotic twins, each fetus has a separate placenta and a separate amniotic sac. A small number (1–2%) of monozygotic twins share the same placenta and amniotic sac. Fraternal twins each have their own placenta and own amniotic sac.

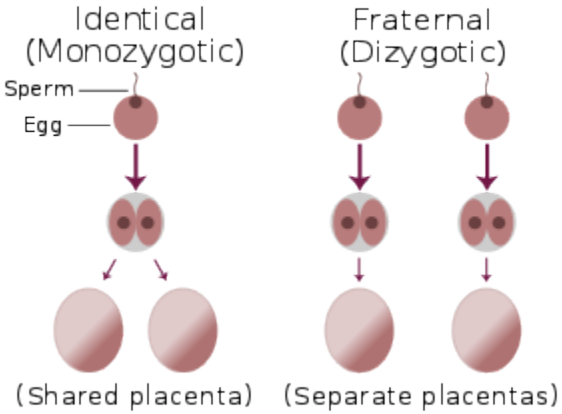


Figure 1. *Monozygotic twins come from a single zygote and generally share the same placenta, although some (18-30%) have separate placentas. Dizygotic twins come from two separately fertilized eggs and have their own placentas and amniotic sacs.*

Monozygotic (one egg/identical) twins can be categorized into four types depending on the timing of the separation and duplication of cells. Various types of chorionicity and amniosity (how the baby's

sac looks) in monozygotic twins are a result of when the fertilized egg divides. This is known as placentation.

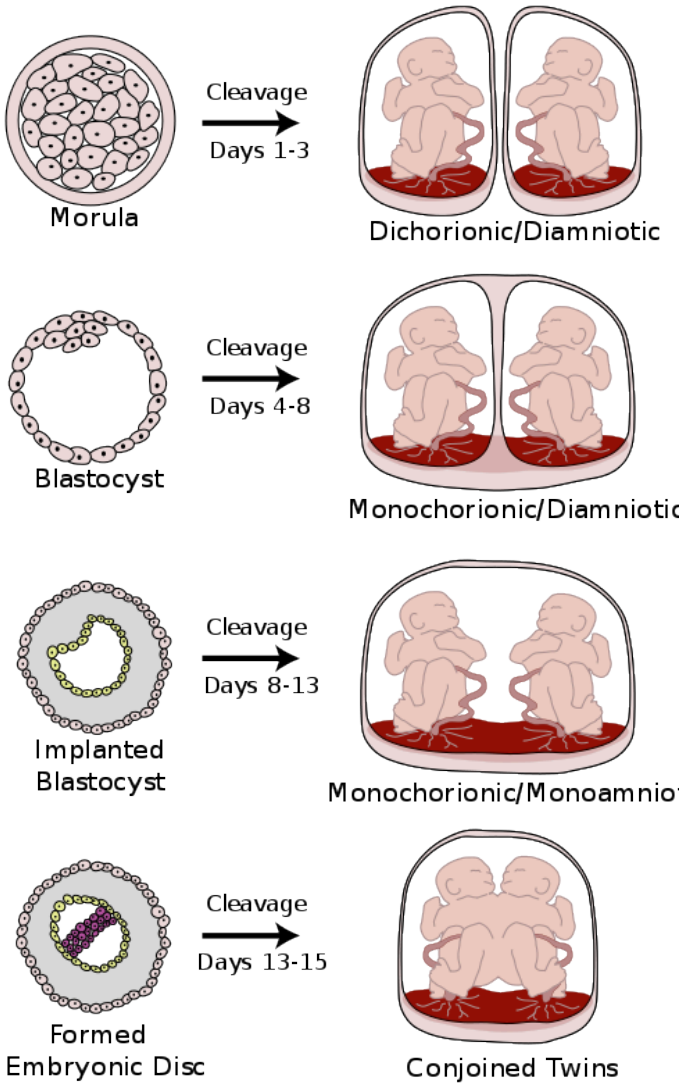


Figure 2. *Various types of chorionicity and amniosity (how the baby's sac looks) in monozygotic (one egg/identical) twins as a result of when the fertilized egg divides (Author Kevin Dufenbach)*

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Conjoined twins

Conjoined twins are monozygotic twins whose bodies are joined together during pregnancy. This occurs when the zygote starts to split after day 12 following fertilization and fails to separate completely. This condition occurs in about 1 in 50,000 human pregnancies. Most conjoined twins are now evaluated for surgery to attempt to separate them into separate functional bodies. The degree of difficulty rises if a vital organ or structure is shared between twins, such as the brain, heart, or liver.

Vanishing twins

Researchers suspect that as many as 1 in 8 pregnancies start out as multiples, but only a single fetus is brought to full term because the other fetus has died very early in the pregnancy and has not been detected or recorded. Early obstetric ultrasonography exams sometimes reveal an "extra" fetus, which fails to develop and instead disintegrates and vanishes in the uterus. There are several reasons for the "vanishing" fetus, including it being embodied or absorbed by the other fetus, placenta or the mother. This is known as vanishing twin syndrome. Also, in an unknown proportion of cases, two

zygotes may fuse soon after fertilization, resulting in a single chimeric embryo, and, later, fetus.

Twin Studies

Using the features of height and spoken language as examples, let's take a look at how nature and nurture apply: identical twins, unsurprisingly, are almost perfectly similar for height. The heights of fraternal twins, however, are like any other sibling pairs: more similar to each other than to people from other families, but hardly identical. This contrast between twin types gives us a clue about the role genetics plays in determining height.

Now consider spoken language. If one identical twin speaks Spanish at home, the co-twin with whom she is raised almost certainly does too. But the same would be true for a pair of fraternal twins raised together. In terms of spoken language, fraternal twins are just as similar as identical twins, so it appears that the genetic match of identical twins doesn't make much difference.



Figure 3. *Identical twins Laurent and Larry Nicolas Bourgeois, also known as the Les Twins, are internationally renowned dancers.*

Twin and adoption studies are two instances of a much broader class of methods for observing nature-nurture called **quantitative genetics**, the scientific discipline in which similarities among individuals are analyzed based on how biologically related they are. We can do these studies with siblings and half-siblings, cousins, and twins who have been separated at birth and raised separately (Bouchard, Lykken, McGue, & Segal, 1990). Such twins are very rare and play a smaller role than is commonly believed in the science of

nature–nurture, or with entire extended families (Plomin, DeFries, Knopik, & Neiderhiser, 2012).

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Video 2. *Twin Studies and Adoption Studies* explains the use of twin and adopted siblings to understand behavioral genetics.

It would be satisfying to be able to say that nature–nurture studies have given us conclusive and complete evidence about where traits come from, with some traits clearly resulting from genetics and others almost entirely from environmental factors, such as child-rearing practices and personal will; but that is not the case. Instead, *everything* has turned out to have some footing in genetics. The more genetically-related people are, the more similar they are—for *everything*: height, weight, intelligence, personality, mental illness, etc. Sure, it seems like common sense that some traits have a genetic bias. For example, adopted children resemble their biological parents even if they have never met them, and identical twins are more similar to each other than are fraternal twins. And while certain psychological traits, such as personality or mental illness (e.g., schizophrenia), seem reasonably influenced by genetics, it turns out that the same is true for political attitudes, how much television people watch (Plomin, Corley, DeFries, & Fulker, 1990), and whether or not they get divorced (McGue & Lykken, 1992).



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Stages of Prenatal Development



How did you come to be who you are? From beginning as a one-cell structure to your birth, your prenatal development occurred in an orderly and delicate sequence. There are three stages of prenatal development: germinal, embryonic, and fetal. Keep in mind that this is different than the three trimesters of pregnancy. Let's take a look at what happens to the developing baby in each of these stages.

> "The body of the unborn baby is more complex than ours. The preborn baby has several extra parts to his body which he needs only so long as he lives inside his mother. He has his own space capsule, the amniotic sac. He has his own lifeline, the umbilical cord, and he has his own root system, the placenta. These all belong to the baby himself, not to his mother. They are all developed from his original cell."
>
> Day & Liley, The Secret World of a Baby, Random House, 1968, p. 13

Let's take a look at some of the changes that take place during each of the three periods of prenatal development: the germinal period, the embryonic period, and the fetal period.

The Germinal Period (Weeks 1-2)

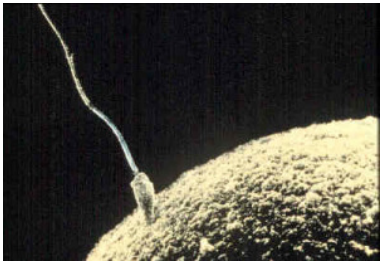


Figure 1. *Sperm and Ovum at Conception*

Conception occurs when a sperm fertilizes an egg and forms a **zygote,** which begins as a one-cell structure. The mother and father's DNA is passed on to the child at the moment of conception. The genetic makeup and sex of the baby are set at this point. The germinal period (about 14 days in length) lasts from conception to implantation of the zygote (fertilized egg) in the lining of the uterus.

During the first week after conception, the zygote divides and multiplies, going from a one-cell structure to two cells, then four cells, then eight cells, and so on. The process of cell division is called **mitosis**. After the fourth division, differentiation of the cells begins to occur as well. Differentiated cells become more specialized, forming different organs and body parts. After 5 days of mitosis, there are 100 cells, and after 9 months there are billions of cells. Mitosis is a fragile process, and fewer than one-half of all zygotes survive beyond the first two weeks (Hall, 2004).

After the zygote divides for about 7–10 days and has 150 cells, it travels down the fallopian tubes and implants itself in the lining of the uterus. It's estimated that about 60 percent of natural conceptions fail to implant in the uterus. The rate is higher for in vitro conceptions. Once the zygote attaches to the uterus, the next stage begins.

The Embryonic Period (Weeks 3-8)

The embryonic period begins once the zygote is implanted in the uterine wall. It lasts from the third through the eighth week after conception. Upon implantation, this multi-cellular organism is called an **embryo**. Now blood vessels grow, forming the placenta. The **placenta** is a structure connected to the uterus that provides nourishment and oxygen from the mother to the developing embryo via the umbilical cord.



Figure 2. *Human Embryo*

During this period, cells continue to differentiate. Basic structures of the embryo start to develop into areas that will become the head, chest, and abdomen. During the embryonic stage, the heart begins to beat and organs form and begin to function. At 22 days after conception, the neural tube forms along the back of the embryo, developing into the spinal cord and brain.

Growth during prenatal development occurs in two major directions: from head to tail (cephalocaudal development) and from the midline outward (proximodistal development). This means that those structures nearest the head develop before those nearest the feet and those structures nearest the torso develop before those away from the center of the body (such as hands and fingers).

The head develops in the fourth week and the precursor to the heart begins to pulse. In the early stages of the embryonic period, gills and a tail are apparent. But by the end of this stage, they

disappear and the organism takes on a more human appearance. The embryo is approximately 1 inch in length and weighs about 4 grams at the end of this period. The embryo can move and respond to touch at this time.

About 20 percent of organisms fail during the embryonic period, usually due to gross chromosomal abnormalities. As in the case of the germinal period, often the mother does not yet know that she is pregnant. It is during this stage that the major structures of the body are taking form making the embryonic period the time when the organism is most vulnerable to the greatest amount of damage if exposed to harmful substances. Potential mothers are not often aware of the risks they introduce to the developing child during this time.

The Fetal Period (Weeks 9-40)



Figure 3. *A fetus at 10 weeks of development.*

When the organism is about nine weeks old, the embryo is called a **fetus**. At this stage, the fetus is about the size of a kidney bean and begins to take on the recognizable form of a human being as the "tail" begins to disappear.

From 9–12 weeks, the sex organs begin to differentiate. By the 12th week, the fetus has all its body parts including external genitalia. In the following weeks, the fetus will develop hair, nails, teeth and the excretory and digestive systems will continue to develop. At the end of the 12th week, the fetus is about 3 inches long and weighs about 28 grams.

At about 16 weeks, the fetus is approximately 4.5 inches long.

Fingers and toes are fully developed, and fingerprints are visible. During the 4-6th months, the eyes become more sensitive to light and hearing develops. The respiratory system continues to develop. Reflexes such as sucking, swallowing and hiccuping develop during the 5th month. Cycles of sleep and wakefulness are present at that time as well. Throughout the fetal stage, the brain continues to grow and develop, nearly doubling in size from weeks 16 to 28. The majority of the neurons in the brain have developed by 24 weeks although they are still rudimentary and the glial or nurse cells that support neurons continue to grow. At 24 weeks the fetus can feel pain (Royal College of Obstetricians and Gynecologists, 1997).

The first chance of survival outside the womb, known as the age of viability is reached at about 22 to 26 weeks (Moore & Persaud, 1998). By the time the fetus reaches the sixth month of development (24 weeks), it weighs up to 1.4 pounds. The hearing has developed, so the fetus can respond to sounds. The internal organs, such as the lungs, heart, stomach, and intestines, have formed enough that a fetus born prematurely at this point has a chance to survive outside of the mother's womb.

Between the 7th and 9th months, the fetus is primarily preparing for birth. It is exercising its muscles, its lungs begin to expand and contract. It is developing fat layers under the skin. The fetus gains about 5 pounds and 7 inches during this last trimester of pregnancy which includes a layer of fat gained during the 8th month. This layer of fat serves as insulation and helps the baby regulate body temperature after birth.

Around 36 weeks, the fetus is almost ready for birth. It weighs about 6 pounds and is about 18.5 inches long, and by week 37 all of the fetus's organ systems are developed enough that it could survive outside the mother's uterus without many of the risks associated with premature birth. The fetus continues to gain weight and grow in length until approximately 40 weeks. By then, the fetus has very little room to move around and birth becomes imminent.



Figure 4. *During the fetal stage, the baby's brain develops and the body adds size and weight until the fetus reaches full-term development.*

Watch It

Video 1. *Prenatal Development* explains many of the developmental milestones and changes that happen during each month of development for the embryo and fetus.

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Environmental Risks to Prenatal Development

Good prenatal care is essential. The developing child is most at risk for some of the most severe problems during the first three months of development. Unfortunately, this is a time at which most mothers are unaware that they are pregnant. It is estimated that 10% of all birth defects are caused by prenatal exposure or **teratogen**. Teratogens are factors that can contribute to birth defects which include some maternal diseases, drugs, alcohol, and stress. These exposures can also include environmental and occupational exposures. Today, we know many of the factors that can jeopardize the health of the developing child. Teratogen-caused birth defects are potentially preventable.

The study of factors that contribute to birth defects is called teratology. Teratogens are usually discovered after an increased prevalence of a particular birth defect. For example, in the early 1960s, a drug known as thalidomide was used to treat morning sickness. Exposure of the fetus during this early stage of development resulted in cases of phocomelia, a congenital malformation in which the hands and feet are attached to abbreviated arms and legs.

Teratogens

Alcohol

One of the most commonly used teratogens is alcohol. Because half of all pregnancies in the United States are unplanned, it is recommended that women of child-bearing age take great caution against drinking alcohol when not using birth control and when pregnant (Surgeon General's Advisory on Alcohol Use During Pregnancy, 2005). Alcohol consumption, particularly during the second month of prenatal development, but at any point during pregnancy, may lead to neurocognitive and behavioral difficulties that can last a lifetime.

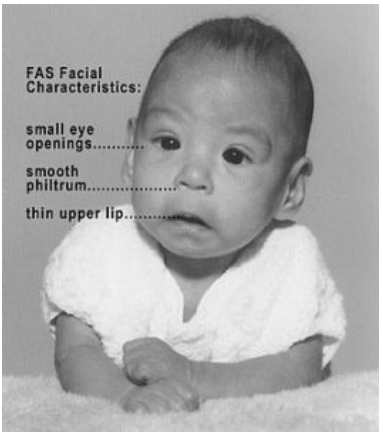


Figure 1. *Some distinguishing characteristics of fetal alcohol spectrum disorders include more narrow eye openings, A smooth philtrum, meaning a smooth area between the upper lip and the nose, and a thin upper lip.*

There is no acceptable safe limit for alcohol use during pregnancy, but binge drinking (5 or more drinks on a single occasion) or having 7 or more drinks during a single week places a child at particularly high risk. In extreme cases, alcohol consumption can lead to fetal death, but more frequently it can result in **fetal alcohol spectrum disorders (FASD)**. This terminology is now used when looking at the effects of exposure and replaces the term fetal alcohol syndrome. It is preferred because it recognizes that symptoms occur on a spectrum and that all individuals do not have the same characteristics. Children with FASD share certain physical features

such as flattened noses, small eye openings, small heads, intellectual developmental delays, and behavioral problems. Those with FASD are more at risk for lifelong problems such as criminal behavior, psychiatric problems, and unemployment (CDC, 2006).

The terms alcohol-related neurological disorder (ARND) and alcohol-related birth defects (ARBD) have replaced the term Fetal Alcohol Effects to refer to those with less extreme symptoms of FASD. ARBD includes kidney, bone, and heart problems.

watch it

Video 1. Medical experts debunk common myths about the safety of drinking alcohol during pregnancy in *The National Organization on Fetal Alcohol Syndrome (NOFAS)Several: Light Drinking.*

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://childpsychology.pressbooks.sunycreate.cloud/?p=62#oembed-1

Tobacco

Smoking is also considered a teratogen because nicotine travels through the placenta to the fetus. When the mother smokes, the

developing baby experiences a reduction in blood oxygen levels. Tobacco use during pregnancy has been associated with low birth weight, placenta previa, birth defects, preterm delivery, fetal growth restriction, and sudden infant death syndrome. Smoking in the month before getting pregnant and throughout pregnancy increases the chances of these risks. Quitting smoking *before* getting pregnant is best. However, for women who are already pregnant, quitting as early as possible can still help protect against some health problems for the mother and baby.

Drugs

Prescription, over-the-counter, or recreational drugs can have serious teratogenic effects. In general, if medication is required, the lowest dose possible should be used. Combination drug therapies and first trimester exposures should be avoided. Almost three percent of pregnant women use illicit drugs such as marijuana, cocaine, Ecstasy and other amphetamines, and heroin. These drugs can cause low birth-weight, withdrawal symptoms, birth defects, or learning or behavioral problems. Babies born with a heroin addiction need heroin just like an adult addict. The child will need to be gradually weaned from the heroin under medical supervision; otherwise, the child could have seizures and die.

Environmental Chemicals

Environmental chemicals can include exposure to a wide array of agents including pollution, organic mercury compounds, herbicides, and industrial solvents. Some environmental pollutants of major concern include lead poisoning, which is connected with low birth weight and slowed neurological development. Children

who live in older housing in which lead-based paints have been used have been known to eat peeling paint chips thus being exposed to lead. The chemicals in certain herbicides are also potentially damaging. Radiation is another environmental hazard that a pregnant woman must be aware of. If a mother is exposed to radiation, particularly during the first three months of pregnancy, the child may suffer some congenital deformities. There is also an increased risk of miscarriage and stillbirth. Mercury leads to physical deformities and intellectual disabilities (Dietrich, 1999).

Sexually Transmitted Infections

Sexually transmitted infections (STIs) can complicate pregnancy and may have serious effects on both the mother and the developing baby. Most prenatal care today includes testing for STIs, and early detection is important. STIs, such as chlamydia, gonorrhea, syphilis, trichomoniasis, and bacterial vaginosis can all be treated and cured with antibiotics that are safe to take during pregnancy. STIs that are caused by viruses, like genital herpes, hepatitis B, or HIV cannot be cured. However, in some cases these infections can be treated with antiviral medications or other preventive measures can be taken to reduce the risk of passing the infection to the baby.

Maternal Diseases

Maternal illnesses increase the chance that a baby will be born with a birth defect or have a chronic health problem. Some of the diseases that are known to potentially have an adverse effect on the fetus include: diabetes, cytomegalovirus, toxoplasmosis, rubella, varicella, hypothyroidism, and Strep B. If the mother contracts Rubella during the first three months of pregnancy, damage can

occur in the eyes, ears, heart, or brain of the unborn child. On a positive note, Rubella has been nearly eliminated in the industrial world due to the vaccine created in 1969. Diagnosing these diseases early and receiving appropriate medical care can help improve the outcomes. Routine prenatal care now includes screening for gestational diabetes and Strep B.

Maternal Stress

Stress represents the effects of any factor able to threaten the homeostasis of an organism; these either real or perceived threats are referred to as the "stressors" and comprise a long list of potentially adverse factors, which can be emotional or physical. Because of a link in blood supply between a mother and fetus, it has been found that stress can leave lasting effects on a developing fetus, even before a child is born. The best-studied outcomes of fetal exposure to maternal prenatal stress are preterm birth and low birth weight. Maternal prenatal stress is also considered responsible for a variety of changes in the child's brain, and a risk factor for conditions such as behavioral problems, learning disorders, high levels of anxiety, attention deficit hyperactivity disorder, autism, and schizophrenia. Furthermore, maternal prenatal stress has been associated with a higher risk for a variety of immune and metabolic changes in the child such as asthma, allergic disorders, cardiovascular diseases, hypertension, hyperlipidemia, diabetes, and obesity.



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Factors influencing prenatal risks

There are several considerations in determining the type and amount of damage that might result from exposure to a particular teratogen (Berger, 2004). These include:

- **The timing of the exposure**: Structures in the body are vulnerable to the most severe damage when they are forming. If a substance is introduced during a particular structure's critical period (time of development), the damage to that structure may be greater. For example, the ears and arms reach their critical periods at about 6 weeks after conception. If a mother exposes the embryo to certain substances during this period, the arms and ears may be malformed.
- **The amount of exposure:** Some substances are not harmful unless the amounts reach a certain level. The critical level depends in part on the size and metabolism of the mother.
- **Genetics:** Genetic make-up also plays a role in the impact a particular teratogen might have on the child. This is suggested by fraternal twin studies who are exposed to the same prenatal environment, yet do not experience the same teratogenic effects. The genetic make-up of the mother can also have an effect; some mothers may be more resistant to teratogenic effects than others.
- **Being male or female:** Males are more likely to experience damage due to teratogens than are females. It is believed that the Y chromosome, which contains fewer genes than the X,

may have an impact.

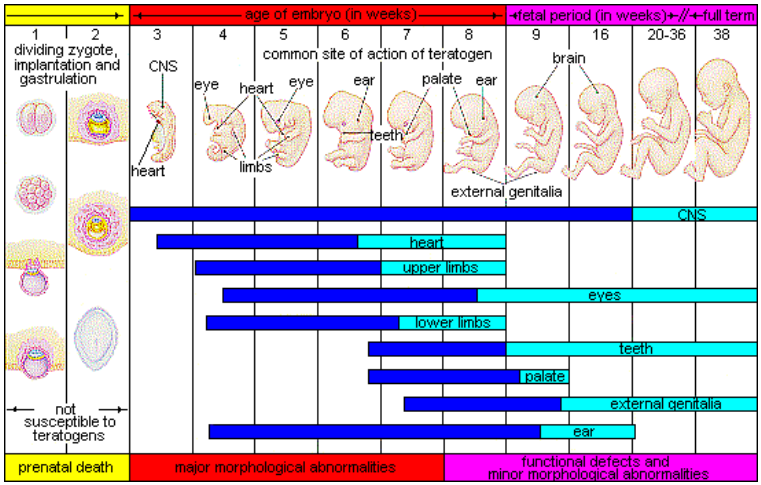


Figure 2. Critical Periods of Prenatal Development. *This image summarizes the three developmental periods in prenatal development. The blue images indicate where major development is happening and the aqua indicates where refinement is happening. As shown, the majority of organs are particularly susceptible during the embryonic period. The central nervous system still continues to develop in major ways through the fetal period as well.*

Complications of Pregnancy and Delivery

There are a number of common side effects of pregnancy. Not everyone experiences all of these nor do women experience them to the same degree. And although they are considered "minor" these problems are potentially very uncomfortable. These side effects include nausea (particularly during the first 3-4 months of pregnancy as a result of higher levels of estrogen in the system), heartburn, gas, hemorrhoids, backache, leg cramps,
insomnia, constipation,
shortness of breath or varicose veins (as a result of carrying a heavy load on the abdomen). What is the cure? Delivery!



Figure 1. *Pregnancy affects women in different ways; some notice few adverse side effects, while others feel high levels of discomfort, or develop more serious complications.*

Major Complications

The following are some serious complications of pregnancy that can pose health risks to mother and child and that often require special care.

- Gestational diabetes is when a woman without diabetes develops high blood sugar levels during pregnancy.
- Hyperemesis gravidarum is the presence of severe and persistent vomiting, causing dehydration and weight loss. It is more severe than the more common morning sickness.
- Preeclampsia is gestational hypertension. Severe preeclampsia involves blood pressure over 160/110 with additional signs. Eclampsia is a seizure in a pre-eclamptic patient.
- Deep vein thrombosis is the formation of a blood clot in a deep vein, most commonly in the legs.
- A pregnant woman is more susceptible to infections. This increased risk is caused by an increased immune tolerance in pregnancy to prevent an immune reaction against the fetus.
- Peripartum cardiomyopathy is a decrease in heart function which occurs in the last month of pregnancy, or up to six months post-pregnancy.

Maternal Mortality

Maternal mortality is unacceptably high. About 830 women die from pregnancy or childbirth-related complications around the world every day. It was estimated that in 2015, roughly 303,000 women died during and following pregnancy and childbirth. Almost all of these deaths occurred in low-resource settings, and most could have been prevented. The high number of maternal deaths in some areas of the world reflects inequities in access to health services and highlights the gap between rich and poor. Almost all maternal deaths (99%) occur in developing countries. More than half of these deaths occur in sub-Saharan Africa and almost one-third occur in South Asia.

Almost all maternal deaths can be prevented, as evidenced by the huge disparities found between the richest and poorest countries.

The lifetime risk of maternal death in high-income countries is 1 in 3,300, compared to 1 in 41 in low-income.[1]

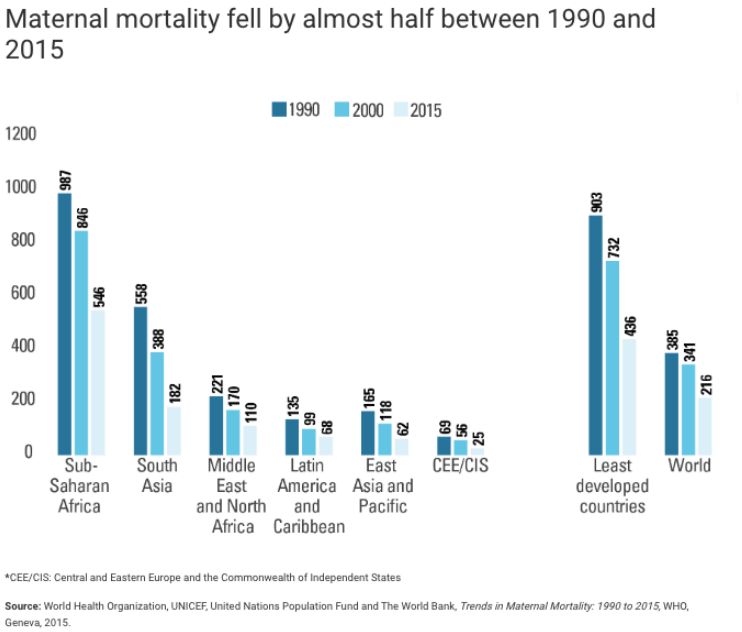


Figure 2. *This graph shows declining maternal mortality rates, as measured by the number of deaths per 100,000 live births. in 1990, 903 out of 100,000 live births resulted in death in the least developed countries, but that number has improved to 436 out of 100,000 births in 2015. Globally, there were 216 deaths for every 100,000 live births in 2015. Source: UNICEF, https://data.unicef.org/topic/maternal-health/maternal-mortality/.*

Even though maternal mortality in the United States is relatively rare today because of advances in medical care, it is still an issue that needs to be addressed. The number of reported pregnancy-

1. Maternal mortality (February 2018). World Health Organization. Retrieved from https://www.who.int/news-room/fact-sheets/detail/maternal-mortality

related deaths in the United States steadily increased from 7.2 deaths per 100,000 live births in 1987 to 18.0 deaths per 100,000 live births in 2014. The Centers for Disease Control and Prevention define a **pregnancy-related death** as the death of a woman while pregnant or within 1 year of the end of a pregnancy–regardless of the outcome, duration, or site of the pregnancy–from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes. The reasons for the overall increase in pregnancy-related mortality are unclear. What do you think are some reasons for this surprising increase in the United States? What can be done to change this statistic?

Watch It: Maternal Mortality in the United States

Video 1. In the United States, black women are disproportionately more likely to die from complications related to pregnancy or childbirth than any other race; they are three or four times more likely than white women to die due to pregnancy-related death and are more likely to receive worse maternal care.[2] Black women from higher income groups and with advanced education levels also have heightened risks—even tennis superstar Serena Williams had near-deadly complications during the birth of

2. Black Women's Maternal Health: A Multifaceted Approach to Addressing Persistent and Dire Health Disparities (April 2018). National Partnership for Women and Families. Retrieved from http://www.nationalpartnership.org/our-work/health/reports/black-womens-maternal-health.html.

her daughter, Olympia. Why is this the case in our modern world? Watch this video to learn more:



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The data below shows percentages of the causes of pregnancy-related deaths in the United States during 2011–2014:

- Cardiovascular diseases, 15.2%.
- Non-cardiovascular diseases, 14.7%.
- Infection or sepsis, 12.8%.
- Hemorrhage, 11.5%.
- Cardiomyopathy, 10.3%.
- Thrombotic pulmonary embolism, 9.1%.
- Cerebrovascular accidents, 7.4%.
- Hypertensive disorders of pregnancy, 6.8%.
- Amniotic fluid embolism, 5.5%.
- Anesthesia complications, 0.3%.

The cause of death is unknown for 6.5% of all 2011–2014 pregnancy-related deaths.



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Miscarriage

Spontaneous abortion is experienced in an estimated 20-40 percent of undiagnosed pregnancies and in another 10 percent of diagnosed pregnancies. Usually, the body aborts due to chromosomal abnormalities and this typically happens before the 12th week of pregnancy. Cramping and bleeding result and normal periods return after several months. Some women are more likely to have repeated miscarriages due to chromosomal, amniotic, or hormonal problems; but miscarriage can also be a result of defective sperm (Carroll et al., 2003).

The Process of Delivery

Vaginal Delivery

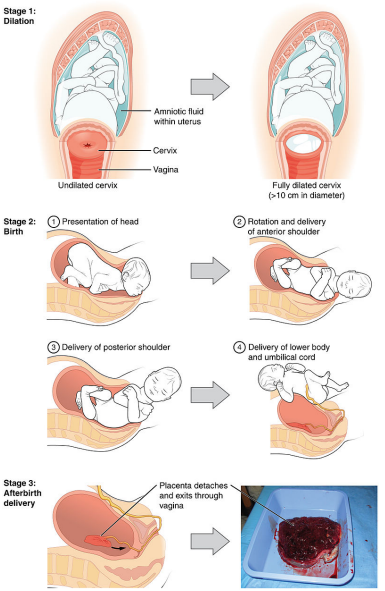


Figure 1. *The stages of childbirth.*

The first stage of labor is typically the longest. The First Stage of labor begins with uterine contractions that may initially last about 30 seconds and be spaced 15 to 20 minutes apart. These increase in duration and frequency to more than a minute in length and about 3 to 4 minutes apart. Typically, doctors advise that they should be called when contractions are coming about every 5 minutes. Some women experience false labor or Braxton-Hicks contractions, especially with the first child. These may come and go. They tend to diminish when the mother begins walking around. Real labor pains tend to increase with walking.

During this stage, the cervix or opening to the uterus dilates to 10 centimeters or just under 4 inches. This may take around 12-16 hours for first children or about 6-9 hours for women who have previously given birth. It takes one woman in 9 over 24 hours to dilate completely. Labor may also begin with a discharge of blood or amniotic fluid. If the amniotic sack breaks, which happens for one out of eight pregnancies, labor will be induced if necessary to reduce the risk of infection.

The second stage involves the passage of the baby through the birth canal. This stage takes about 10-40 minutes. Contractions usually come about every 2-3 minutes. The mother pushes and relaxes as directed by the medical staff. Normally the head is delivered first. The baby is then rotated so that one shoulder can come through and then the other shoulder. The rest of the baby quickly passes through. The baby's mouth and nose are suctioned out. The umbilical cord is clamped and cut.

The third stage is relatively painless in comparison to the other stages. During this stage, the placenta or afterbirth is delivered. This typically occurs within 20 minutes after the delivery of the baby. If tearing of the vagina occurred during birth, the tear may be stitched at this time.



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Video 1. *Norma Labour & Vavinal Birth* animates the process of vaginal delivery.



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Cesarean Delivery

Cesarean section, also known as **C-section**, or **cesarean delivery**, is the use of surgery to deliver babies. A cesarean section is often necessary when a vaginal delivery would put the baby or mother at risk. This may include obstructed labor, twin pregnancy, high blood pressure in the mother, breech birth, or problems with the placenta or umbilical cord. Cesarean delivery may be performed based upon the shape of the mother's pelvis or history of a previous C-section. A trial of vaginal birth after C-section may be possible. The World Health Organization recommends that cesarean section be performed only when medically necessary. Some C-sections are performed without a medical reason, upon request by someone, usually the mother.

Watch it

Video 2. *C-section* animates the process of Cesarean delivery.



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Video 3. C-Section with the Mobius® Elastic Retractor is

a medical demonstration depicting a real Cesarean delivery (graphic content).



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Approaches to Childbirth



What comes to your mind when you think about a woman giving birth? Some may describe it as beautiful, a miracle, and a rite of passage. Others may think of pain, fear, and discomfort. Labor and delivery is not an easy feat. It is called *labor* after all because it is a lot of work! In this section, you'll learn more about the various approaches to childbirth as well as the actual process.

Approaches to Childbirth



Figure 1. *This couple prepares for their baby by attending a class where they learn useful skills related to childbirth and infant care, including swaddling.*

Prepared childbirth refers to being not only physically in good condition to help provide a healthy environment for the baby to develop, but also helping a couple to prepare to accept their new roles as parents and to get information and training that will assist them for delivery and life with the baby as much as possible. The more a couple can learn about childbirth and the newborn, the better prepared they will be for the adjustment they must make to a new life. Nothing can prepare a couple for this completely. Once a couple finds that they are to have a child, they begin to conjure up images of what they think the experience will involve. Once the child is born, they must

reconcile those images with reality (Galinsky, 1987). Knowing more of what to expect does help them in forming more realistic images thus making the adjustment easier. Let's explore some of the methods of prepared childbirth.

HypnoBirthing

Grantley Dick-Read was an English obstetrician and pioneer of prepared childbirth in the 1930s. In his book *Childbirth Without Fear*, he suggests that the fear of childbirth increases tension and makes the process of childbearing more painful. He believed that if mothers were educated, the fear and tension would be reduced and the need for medication could frequently be eliminated. The Dick-Read method emphasized the use of relaxation and proper breathing with contractions as well as family support and education. Today this method is known as the Mongan Method or HypnoBirthing. Women using this method report feeling like they are lost in a daydream, but focused and in control.

The Lamaze Method

This method originated in Russia and was brought to the United States in the 1950s by Fernand Lamaze. The emphasis of this method is on teaching the woman to be in control in the process of delivery. It includes learning muscle relaxation, breathing through contractions, having a focal point (usually a picture to look at) during contractions, and having a support person who goes through the training process with the mother and serves as a coach during delivery. The Lamaze Method is still the most commonly taught method in the U.S. today.

The Bradley Method

This method originated in the late 1940s and helps women deliver naturally, with few or no drugs. There are a series of courses that emphasize excellent nutrition and exercise, relaxation techniques to manage pain, and the involvement of the partner as a coach. Parents-to-be are taught to be knowledgeable consumers of birth services and to take responsibility in making informed decisions regarding procedures, attendants and the birthplace. In turn, this will lead to keeping mothers healthy and low-risk in order to avoid complications that may lead to medical intervention.

Nurse-Midwives

Historically in the United States, most babies were born under the care of lay midwives. In the 1920s, middle-class women were increasingly using doctors to assist with childbirth but rural women were still being assisted by lay midwives. The nursing profession began educating nurse-midwives to assist these women. Nurse-midwives continued to assist most rural women with delivery until the 1970s and 1980s when their growth is thought to have posed a threat to the medical profession (Weitz, 2007). Women who are at low risk for birth complications can successfully deliver under the care of nurse-midwives. Some hospitals give privileges to nurse-midwives to deliver there. They may also deliver babies at home or in birthing centers.

Home Birth

Because one out of every 20 births involves a complication, most medical professionals recommend that delivery take place in a

hospital. However, some couples choose to have their baby at home. About 1 percent of births occur outside of a hospital in the United States. Two-thirds of these are home births and more than half of these are assisted by midwives. In the United States, women who have had previous children, who are over 25, and who are white are most likely to not give birth in a hospital (MacDorman et al., 2010).

Birthing Centers

A birthing center presents a more home-like environment than a hospital labor ward, typically with more options during labor: food/drink, music, and the attendance of family and friends if desired. Other characteristics can also include non-institutional furniture such as queen-sized beds, large enough for both mother and father, and perhaps birthing tubs or showers for water births. The decor is meant to emphasize the normality of birth. In a birth center, women are free to act more spontaneously during their birth, such as squatting, walking or performing other postures that assist in labor. Active birth is encouraged. The length of stay after birth is shorter at a birth center; sometimes just 6 hours after birth the mother and infant can go home. One-third of out-of-hospital births occur in freestanding clinics, birthing centers, or in physicians' offices or other locations.

Water Birth

Laboring and/or giving birth in a warm tub of water can help a woman relax. The buoyancy of the water can help alleviate discomfort and pressure for the mother. Many hospitals have birthing tubs that allow women to labor in them. However, only

some hospitals allow for birth to take place in the water. Some believe that water birth gives a more calm and tranquil transition for the baby from the womb. Water births are more common to occur at home or in birthing centers.

watch it

Video 1. *Waterbirth* depicts the real birth of twins underwater. (graphic content)

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Hospital Birth

Most births in the U.S. occur in hospitals. Mothers have the choice to have a medicated or unmedicated delivery. Some women do fine with "natural methods" of pain relief alone. Many women blend "natural methods" with medications and medical interventions that relieve pain. Building a positive outlook on childbirth and managing fear may also help some women cope with the pain. Labor pain is not like pain due to illness or injury. Instead, it is caused by

contractions of the uterus that are pushing the baby down and out of the birth canal. In other words, labor pain has a purpose.

The most common pain relief method used during labor and delivery is an epidural. An epidural is a procedure that involves placing a tube into the lower back, into a small space outside the spinal cord. Small doses of medicine can be given through the tube as needed throughout labor. With an epidural, pain relief starts 10 to 20 minutes after the medicine has been given. The degree of numbness felt can be adjusted. An epidural can prolong the first and second stages of labor. If given late in labor or if too much medicine is used, it might be hard to push when the time comes.

watch it

Video 2. *Epidural Anaesthesia* demonstrates this procedure.

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Another form of pharmacologic pain relief available for laboring mothers is inhaled nitrous oxide. This is typically a 50/50 mixture of nitrous oxide with air that is an inhaled analgesic and anesthetic. Nitrous oxide has been used for pain management in childbirth since the late 1800s. The use of inhaled analgesia is commonly used

in the UK, Finland, Australia, Singapore, and New Zealand, and is gaining in popularity in the United States.[1]

Making A Birth Plan

As you can see, women have many choices when it comes to the approach they want to take in preparing for childbirth. What decisions would you make? Learn how to create a birth plan.



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1. Giving Birth Naturally: Natural Childbirth Techniques. American Pregnancy Association. Retrieved from http://americanpregnancy.org/labor-and-birth/natural-childbirth-techniques/

Newborn Assessment and Risk

Assessing the Neonate

There are several ways to assess the condition of the newborn. The most widely used tool is the Neonatal Behavioral Assessment Scale (NBAS) developed by T. Berry Brazelton. This tool has been used around the world to help parents get to know their infants and to make comparisons of infants in different cultures (Brazelton & Nugent, 1995). The baby's motor development, muscle tone, and stress response are assessed.

The APGAR is conducted one minute and five minutes after birth. This is a very quick way to assess the newborn's overall condition. Five measures are assessed: the heart rate, respiration, muscle tone (quickly assessed by a skilled nurse when the baby is handed to them or by touching the baby's palm), reflex response (the Babinski reflex is tested), and color. A score of 0 to 2 is given on each feature examined. An APGAR of 5 or less is cause for concern. The second APGAR should indicate improvement with a higher score.



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https://childpsychology.pressbooks.sunycreate.cloud/?p=66#oembed-1

Video 1. *APGAR Score* explains how to calculate the APGAR score for a newborn.

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Complications of the Newborn

Low Birth Weight

We have been discussing a number of teratogens associated with a low birth weight such as cocaine, tobacco, etc. A child is considered to have a low birth weight if they weigh less than 5.8 pounds (2500 grams). About 8.17 percent of babies born in the United States are of low birth weight and 1.4 percent are born very low birth weight. A low birth weight baby has difficulty maintaining adequate body temperature because it lacks the fat that would otherwise provide insulation. Such a baby is also at more risk of infection. And 67 percent of these babies are also preterm which can make them more at risk for a respiratory infection. Very low birth weight babies (2 pounds or less) have an increased risk of developing cerebral palsy. Many causes of low birth weight are preventable with proper prenatal care.

Premature Birth

A child might also have a low birth weight if it is born at less than 37 weeks gestation (which qualifies it as a preterm baby). In 2016, 9.85 percent of babies born in the U.S. were preterm.[1] Early birth can be triggered by anything that disrupts the mother's system. For instance, vaginal infections or gum disease can actually lead to premature birth because such infection causes the mother to release anti-inflammatory chemicals which, in turn, can trigger contractions. Smoking and the use of other teratogens can also lead to preterm birth.

Anoxia and Hypoxia

One of the leading causes of infant brain damage is lack of oxygen shortly after birth. Hypoxia occurs when the infant is deprived of an adequate amount of oxygen, leading to mild to moderate brain damage. Apoxia occurs when the infant undergoes a total lack of oxygen, which can lead to severe brain damage. This lack of oxygen is typically caused by umbilical cord problems, birth canal problems, blocked airways, and placenta abruption. Both hypoxia and anoxia can lead to cerebral palsy and a host of other medical disorders.

1. Birthweight and Gestation. Centers for Disease Control and Prevention (2016). Retrieved from https://www.cdc.gov/nchs/fastats/birthweight.htm

Glossary

adoption study: a behavior genetic research method that involves the comparison of adopted children to their adoptive and biological parents

allele: a specific version of a gene

amniotic sac: a fluid-filled sac that protects and contains the fetus in the uterus

behavioral genetics: the empirical science of how genes and environments combine to generate behavior

cesarean section: is the use of surgery to deliver babies through the mother's abdomen and uterus

chromosome: a DNA molecule with part or all of the genetic material of an organism

deoxyribonucleic acid (DNA): a helix-shaped molecule made up of nucleotide base pairs

dizygotic: derived from two separate ova

embryo: a multi-celled organism between two and eight weeks after fertilization

epigenetics: the study of heritable phenotype changes that do not involve alterations in the DNA sequence; the prefix epi- means above

evolutionary psychology: a field of psychology that focuses on how universal patterns of behavior and cognitive processes have evolved over time

fetal alcohol spectrum disorders: a group of abnormalities in babies born to mothers who consume alcohol during pregnancy

fetus: an unborn human baby from nine weeks after conception until birth

gamete: a male or female reproductive cell

genes: sequences of DNA that control or partially control a number of characteristics

genotype: the genetic makeup of an individual

heterozygous: a combination of alleles for a given gene

homozygous: having two copies of the same allele for a given gene

mitosis: the process of cell division

monozygotic: derived from a single ovum

mutation: a sudden permanent change in a gene

phenotype: the individual's inherited physical characteristics

placenta: an organ that develops in the uterus during pregnancy to provide oxygen and nutrients to the prenate via the umbilical cord

pregnancy-related death: the death of a woman while pregnant or within 1 year of the end of a pregnancy from any cause related to or aggravated by the pregnancy

prenatal diagnosis: an aspect of prenatal care focused on pursuing additional detailed information once a particular problem has been found

prenatal screening: an aspect of prenatal care focused on finding problems among a large population with affordable and noninvasive methods

quantitative genetics: scientific and mathematical methods for inferring genetic and environmental processes based on the degree of genetic and environmental similarity among organisms

teratogen: any agent which can cause a birth defect

theory of evolution by natural selection: the process by which organisms change over time so that those with genes and behaviors better suited for their environment will survive and reproduce, while those that are poorly suited for their environment will die off

twin studies: a behavior genetic research method that involves a comparison of the similarity of identical (monozygotic; MZ) and fraternal (dizygotic; DZ) twins

zygote: a one-cell structure that is created when a sperm and egg merge

PHYSICAL DEVELOPMENT IN INFANCY THROUGH ADOLESCENCE

Learning Objectives

- Summarize overall physical growth patterns during infancy, early childhood, middle childhood, and adolescence
- Describe pubertal changes in body size, proportions, and sexual maturity
- Explain social and emotional attitudes and reactions toward puberty, including sex differences
- Describe sexual development from infancy through adolescence
- Describe the growth and changes in the brain from infancy through adolescence
- Explain gross and fine motor skills in infants and early childhood
- Explain newborn perceptual abilities
- Identify the nutritional concerns of infants, children, and adolescents
- Summarize concerns associated with eating disorders
- Describe sleep concerns from infancy to adolescence
- Explain the vaccination debate and its

consequences

Welcome to the story of development from infancy through adolescence. Did you ever wonder how babies grow from tiny, helpless infants into well-developed and independent adults? It doesn't happen overnight, but the process begins right from day one. We'll begin this module by reviewing the rapid physical development that occurs during infancy and early childhood, the changes of middle childhood, and finally, the maturation during adolescence. In some ways, the changes in adolescence are more dramatic than those that occur in infancy—unlike infants, adolescents are aware of the changes that are taking place and of what the changes mean. In this section, we will learn about the pubertal changes in body size, proportions, and sexual maturity, as well as the social and emotional attitudes and reactions toward puberty. Since nutrition and health are so important throughout childhood and adolescence for lifetime development, and the consequence of neglect can be severe, we will consider some of the influences on early physical growth, particularly the importance of nutrition and some of the health concerns during adolescence, including eating disorders.

The obvious physical changes are accompanied by changes in the brain. While we may not observe the actual brain changing, we can see the effects of the brain changes in the way that children sense, move, sleep, play, and learn. We will explore how infants' senses develop and how sensory systems like hearing and vision operate, and how infants take in information through their senses and transform it into meaningful information. Infants are also born with motor abilities. At birth, infants are equipped with a number of reflexes, which are involuntary movements in response to stimulation. We will explore how these innate reflexes are eventually modified through experiences to become voluntary

movements and the basis for motor development as skills emerge throughout childhood.

Physical Growth

Physical Growth in Infancy

The average newborn weighs approximately 7.5 pounds, although a healthy birth weight for a full-term baby is considered to be between 5 pounds, 8 ounces (2,500 grams), and 8 pounds, 13 ounces (4,000 grams). The average length of a newborn is 19.5 inches, increasing to 29.5 inches by 12 months and 34.4 inches by 2 years old (WHO Multicentre Growth Reference Study Group, 2006).

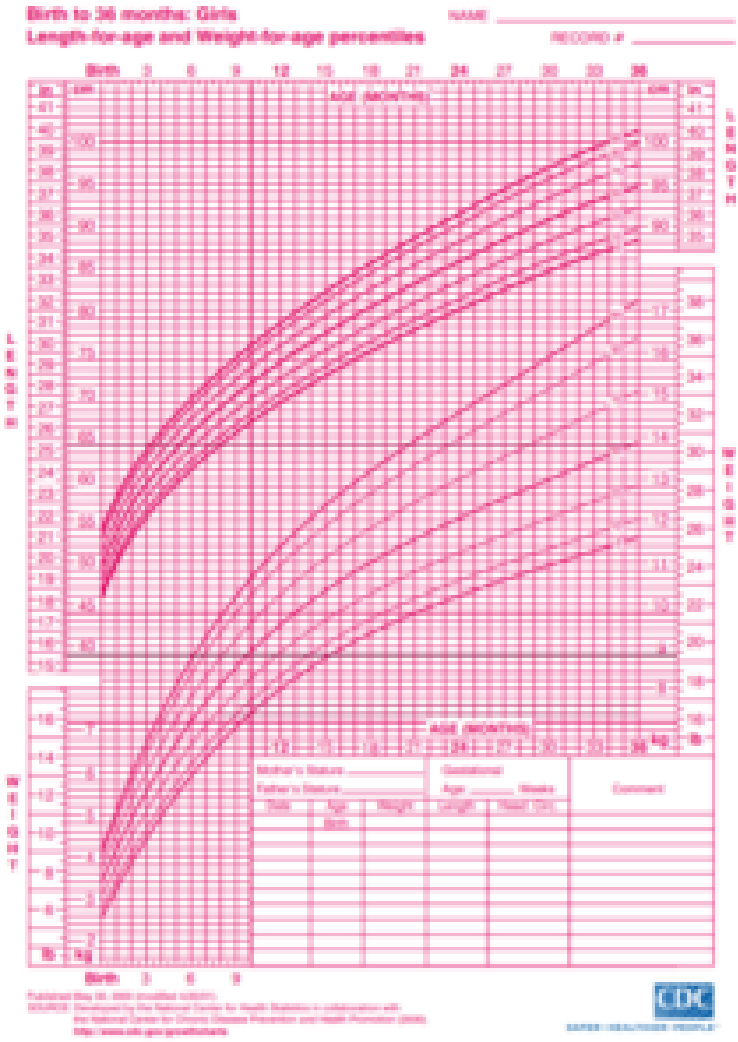
For the first few days of life, infants typically lose about 5 percent of their body weight as they eliminate waste and get used to feeding. This often goes unnoticed by most parents but can be cause for concern for those who have a smaller infant. This weight loss is temporary, however, and is followed by a rapid period of growth. By the time an infant is 4 months old, it usually doubles in weight, and by one year has tripled its birth weight. By age 2, the weight has quadrupled. The average length at 12 months (one-year-old) typically ranges from 28.5-30.5 inches. The average length at 24 months (two years old) is around 33.2-35.4 inches (CDC, 2010).



Figure 1. *Children experience rapid physical changes through infancy and early childhood. (credit "left": modification of work by Kerry Ceszyk; credit "middle-left": modification of work by Kristi Fausel; credit "middle-right": modification of work by "devinf"/Flickr; credit "right": modification of work by Rose Spielman)*

Monitoring Physical Growth

As mentioned earlier, growth is so rapid in infancy that the consequences of neglect can be severe. For this reason, gains are closely monitored. At each well-baby check-up, a baby's growth is compared to that baby's previous numbers. Often, measurements are expressed as a **percentile** from 0 to 100, which compares each baby to other babies of the same age. For example, weight at the 40th percentile means that 40 percent of all babies weigh less, and 60 percent weigh more. For any baby, pediatricians and parents can be alerted early just by watching percentile changes. If an average baby moves from the 50th percentile to the 20th, this could be a sign of **failure to thrive,** which could be caused by various medical conditions or factors in the child's environment. The earlier the concern is detected, the earlier intervention and support can be provided for the infant and caregiver.


Birth to 36 months: Girls
Length-for-age and Weight-for-age percentiles
NAME
RECORD #
AGE (MONTHS)
LENGTH
WEIGHT
Mother's Stature
Father's Stature
Gestational
Age _____ Weeks
Comment
Date
Age
Birth
Weight
Length
Head (FC)
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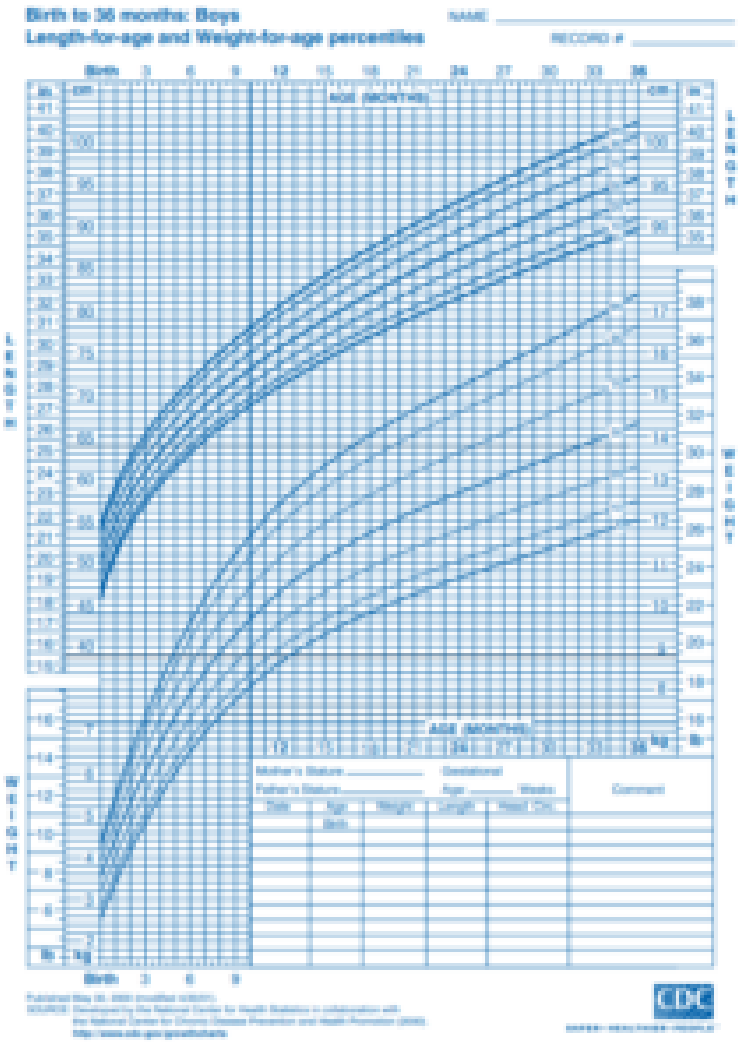


Figure 2. Growth charts display a normal growth curve for boys and girls from birth to 3 years old.

Body Proportions

Another dramatic physical change that takes place in the first several years of life is a change in body proportions. The head initially makes up about 50 percent of a person's entire length when developing in the womb. At birth, the head makes up about 25 percent of a person's length (just imagine how big your head would be if the proportions remained the same throughout your life!). In adulthood, the head comprises about 15 percent of a person's length. Imagine how difficult it must be to raise one's head during the first year of life! And indeed, if you have ever seen a 2- to 4-month-old infant lying on their stomach trying to raise the head, you know how much of a challenge this is.



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Physical Growth in Early Childhood

Children between the ages of 2 and 6 years tend to grow about 3 inches in height each year and gain about 4 to 5 pounds in weight each year. The average 6-year-old weighs about 46 pounds and is about 46 inches in height. The 3-year-old is very similar to a toddler with a large head, large stomach, short arms, and short legs. During early childhood, children start to lose some of their baby fat, making them less like a baby, and more like a child as they progress through this stage. By around age 3, children will have all 20 of their primary

teeth, and by around age 4, may have 20/20 vision. Many children take a daytime nap until around age 4 or 5, then sleep between 11 and 13 hours at night.

By the time the child reaches age 6, the torso has lengthened and body proportions have become more like those of adults. It should be noted that these growth patterns are seen where children receive adequate nutrition. Studies from many countries support the assertion that children tend to grow more slowly in low SES areas, and thus they are smaller.

This growth rate is slower than that of infancy and is accompanied by a reduced appetite between the ages of 2 and 6. This change can sometimes be surprising to parents and lead to the development of poor eating habits.



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Physical Growth in Middle Childhood

Rates of growth generally slow during middle childhood. Typically, a child will gain about 5-7 pounds a year and grow about 2 inches per year. Many girls and boys experience a prepubescent growth spurt, but this growth spurt tends to happen earlier in girls (around age 9-10) than it does in boys (around age 11-12). Because of this, girls are often taller than boys at the end of middle childhood. Children in middle childhood tend to slim down and gain muscle strength

and lung capacity making it possible to engage in strenuous physical activity for long periods of time.

The brain reaches its adult size at about age 7. That is not to say, however, that the brain is fully developed by age 7. The brain continues to develop for many years after it has attained its adult size. The school-aged child is better able to plan, coordinate activity using both left and right hemispheres of the brain, and to control emotional outbursts. Paying attention is also improved as the prefrontal cortex matures. As the myelin continues to develop throughout middle childhood, the child's reaction time improves as well.

During middle childhood, physical growth slows down. One result of the slower rate of growth is an improvement in motor skills. Children of this age tend to sharpen their abilities to perform both gross motor skills such as riding a bike and fine motor skills such as cutting their fingernails.

Losing Primary Teeth



Deciduous teeth, commonly known as milk teeth, baby teeth, primary teeth, and temporary teeth, are the first set of teeth in the growth development of humans. The primary teeth are important for the development of the mouth, development of the child's speech, for the child's smile, and play a role in chewing food, Most children lose their first tooth around age 6, then continue to lose teeth for the next 6 years. In general, children lose the teeth in the

middle of the mouth first and then lose the teeth next to those in sequence over the 6-year span. By age 12, generally, all of the teeth are permanent teeth, however, it is not extremely rare for one or more primary teeth to be retained beyond this age, sometimes well into adulthood, often because the secondary tooth fails to develop.

Physical Growth in Adolescence

Puberty is the period of rapid growth and sexual development that begins in adolescence and starts at some point between ages 8 and 14. While the sequence of physical changes in puberty is predictable, the onset and pace of puberty vary widely. Every person's individual timetable for puberty is different and is primarily influenced by heredity; however environmental factors—such as diet and exercise—also exert some influence.

Adolescence has evolved historically, with evidence indicating that this stage is lengthening as individuals start puberty earlier and transition to adulthood later than in the past. Puberty today begins, on average, at age 10–11 years for girls and 11–12 years for boys. This average age of onset has decreased gradually over time since the 19th century by 3–4 months per decade, which has been attributed to a range of factors including better nutrition, obesity, increased father absence, and other environmental factors (Steinberg, 2013). Completion of formal education, financial independence from parents, marriage, and parenthood have all been markers of the end of adolescence and beginning of adulthood, and all of these transitions happen, on average, later now than in the past. In fact, the prolonging of adolescence has prompted the introduction of a new developmental period called emerging adulthood that captures these developmental changes out of adolescence and into adulthood, approximately occurring from ages 18 to 29 (Arnett,

2000). We'll learn more about this phase in the next module on early adulthood.

Hormonal Changes

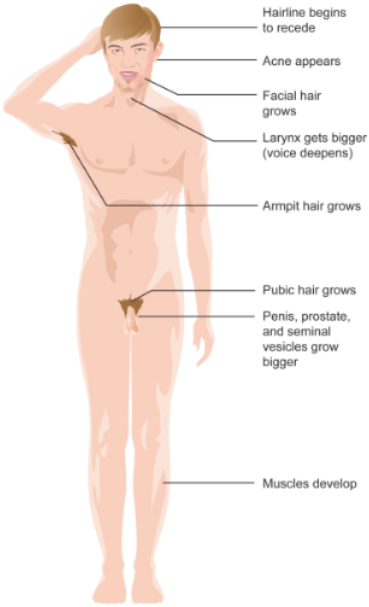


Figure 3. *Major physical changes in males during puberty.*

Puberty involves distinctive physiological changes in an individual's height, weight, body composition, and circulatory and respiratory systems, and during this time, both the adrenal glands and sex glands mature. These changes are largely influenced by hormonal activity. Many hormones contribute to the beginning of puberty, but most notably a major rush of **estrogen** for girls and **testosterone** for boys. Hormones play an *organizational role* (priming the body to behave in a certain way once puberty begins) and an *activational role* (triggering certain behavioral and physical changes). During puberty, the adolescent's hormonal balance shifts strongly towards an adult state; the process is triggered by the pituitary gland, which secretes a surge of hormonal agents into the bloodstream and initiates a chain reaction.

Puberty occurs over two distinct phases, and the first phase, **adrenarche**, begins at 6 to 8 years of age and involves increased production of adrenal androgens that contribute to a number of pubertal changes—such as skeletal growth. The second phase of puberty, **gonadarche**, begins several years later and involves

increased production of hormones governing physical and sexual maturation.

Sexual Maturation

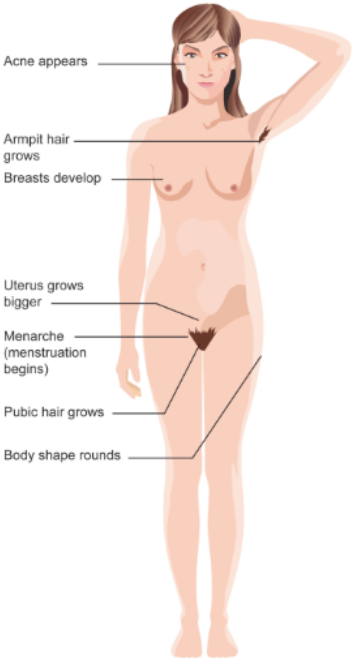


Figure 4. *Major physical changes in females during puberty.*

During puberty, primary and secondary sex characteristics develop and mature. **Primary sex characteristics** are organs specifically needed for reproduction—the uterus and ovaries in females and testes in males. **Secondary sex characteristics** are physical signs of sexual maturation that do not directly involve sex organs, such as the development of breasts and hips in girls, and the development of facial hair and a deepened voice in boys. Both sexes experience the development of pubic and underarm hair, as well as increased development of sweat glands.

The male and female **gonads** are activated by the surge of the hormones discussed earlier, which puts them into a state of rapid growth and development. The testes primarily release testosterone and the ovaries release estrogen; the production of these hormones increases gradually until sexual maturation is met.

For girls, observable changes begin with nipple growth and pubic hair. Then the body increases in height while fat forms particularly

on the breasts and hips. The first menstrual period (**menarche**) is followed by more growth, which is usually completed by four years after the first menstrual period began. Girls experience menarche usually around 12–13 years old. For boys, the usual sequence is the growth of the testes, initial pubic-hair growth, growth of the penis, first ejaculation of seminal fluid (**spermarche**), appearance of facial hair, a peak growth spurt, deepening of the voice, and final pubic-hair growth. (Herman-Giddens et al, 2012). Boys experience spermarche, the first ejaculation, around 13–14 years old.

Physical Growth: The Growth Spurt

During puberty, both sexes experience a rapid increase in height and weight (referred to as a **growth spurt**) over about 2-3 years resulting from the simultaneous release of growth hormones, thyroid hormones, and androgens. Males experience their growth spurt about two years later than females. For girls, the growth spurt begins between 8 and 13 years old (average 10-11), with adult height reached between 10 and 16 years old. Boys begin their growth spurt slightly later, usually between 10 and 16 years old (average 12-13), and reach their adult height between 13 and 17 years old. Both nature (i.e., genes) and nurture (e.g., nutrition, medications, and medical conditions) can influence both height and weight.

Before puberty, there are nearly no differences between males and females in the distribution of fat and muscle. During puberty, males grow muscle much faster than females, and females experience a higher increase in body fat and bones become harder and more brittle. An adolescent's heart and lungs increase in both size and capacity during puberty; these changes contribute to increased strength and tolerance for exercise.

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Reactions Toward Puberty and Physical Development

The accelerated growth in different body parts happens at different times, but for all adolescents, it has a fairly regular sequence. The first places to grow are the extremities (head, hands, and feet), followed by the arms and legs, and later the torso and shoulders. This non-uniform growth is one reason why an adolescent body may seem out of proportion. Additionally, because rates of physical development vary widely among teenagers, puberty can be a source of pride or embarrassment.

Most adolescents want nothing more than to fit in and not be distinguished from their peers in any way, shape, or form (Mendle, 2015). So when a child develops earlier or later than his or her

peers, there can be long-lasting effects on mental health. Simply put, beginning puberty earlier than peers presents great challenges, particularly for girls. The picture for early-developing boys isn't as clear, but evidence suggests that they, too, eventually might suffer ill effects from maturing ahead of their peers. The biggest challenges for boys, however, seem to be more related to late development.

As mentioned in the Khan Academy video about physical development, early maturing boys tend to be stronger, taller, and more athletic than their later maturing peers. They are usually more popular, confident, and independent, but they are also at a greater risk for substance abuse and early sexual activity (Flannery, Rowe, & Gulley, 1993; Kaltiala-Heino, Rimpela, Rissanen, & Rantanen, 2001). Additionally, more recent research found that while early-maturing boys initially had lower levels of depression than later-maturing boys, over time they showed signs of increased anxiety, negative self-image, and interpersonal stress. (Rudolph, Troop-Gordon, Lambert, & Natsuaki, 2014).

Early maturing girls may be teased or overtly admired, which can cause them to feel self-conscious about their developing bodies. These girls are at increased risk of a range of psychosocial problems including depression, substance use and early sexual behavior (Graber, 2013). These girls are also at a higher risk for eating disorders, which we will discuss in more detail later in this module (Ge, Conger, & Elder, 2001; Graber, Lewinsohn, Seeley, & Brooks-Gunn, 1997; Striegel-Moore & Cachelin, 1999).

Late-blooming boys and girls (i.e., they develop more slowly than their peers) may feel self-conscious about their lack of physical development. Negative feelings are particularly a problem for late maturing boys, who are at a higher risk for depression and conflict with parents (Graber et al., 1997) and more likely to be bullied (Pollack & Shuster, 2000).



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Video 1. *Development in Adolescence* provides an overview of physical changes during adolescence and psychosocial impacts.

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Sexual Development

Historically, children have been thought of as innocent or incapable of sexual arousal (Aries, 1962). A more modern approach to sexuality suggests that the physical dimension of sexual arousal is present from birth. That said, it seems to be the case that the elements of seduction, power, love, or lust that are part of the adult meanings of sexuality are not present in sexual arousal at this stage. In contrast, sexuality begins in childhood as a response to physical states and sensation and cannot be interpreted as similar to that of adults in any way (Carroll, 2007).



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Video 4.3.1. "*What Happens When?*" *Child and Adolescent Sexual Development* explains major milestones in sexual development throughout childhood and adolescence, as well as how to support kids during these stages.

Infancy

Boys and girls are capable of erections and vaginal lubrication even before birth (Martinson, 1981). Arousal can signal overall physical contentment and stimulation that accompanies feeding or warmth. Infants begin to explore their bodies and touch their genitals as

soon as they have sufficient motor skills. This stimulation is for comfort or to relieve tension rather than to reach orgasm (Carroll, 2007).

Early Childhood

Self-stimulation is common in early childhood for both boys and girls. Curiosity about the body and about others' bodies is a natural part of early childhood as well. Consider this example. A mother is asked by her young daughter: "So it's okay to see a boy's privates as long as it's the boy's mother or a doctor?" The mother hesitates a bit and then responds, "Yes. I think that's alright." "Hmmm," the girl begins, "When I grow up, I want to be a doctor!" Hopefully, this subject is approached in a way that teaches children to be safe and know what is appropriate without frightening them or causing shame.

As children grow, they are more likely to show their genitals to siblings or peers, and to take off their clothes and touch each other (Okami et al., 1997). Masturbation is common for both boys and girls. Boys are often shown by other boys how to masturbate, but girls tend to find out accidentally. Boys masturbate more often and touch themselves more openly than do girls (Schwartz, 1999).

Hopefully, parents respond to this without undue alarm and without making the children feel guilty about their bodies. Instead, messages about what is going on and the appropriate time and place for such activities help the child learn what is appropriate.

Parents should take the time to speak with their children about when it is appropriate for other people to see or touch them. Many experts suggest that this should occur as early as age 3, and of course the discussion should be appropriate for the child's age. One way to help a young child understand inappropriate touching is to discuss "bathing suit areas." Kids First, Inc. suggests discussing the following: "No one should touch you anywhere your bathing

suit covers. No one should ask you to touch them somewhere that their bathing suit covers. No one should show you a part of their or someone else's bodies that their bathing suit covers." Further, instead of talking about good or bad touching, talk about safe and unsafe touching. This way children will not feel guilty later on when that sort of touching is appropriate in a relationship.



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Adolescence

Developing sexually is an expected and natural part of growing into adulthood. Healthy sexual development involves more than sexual behavior. It is the combination of physical sexual maturation (puberty, age-appropriate sexual behaviors), the formation of a positive sexual identity, and a sense of sexual well-being (discussed more in-depth later in this module). During adolescence, teens strive to become comfortable with their changing bodies and to make healthy, safe decisions about which sexual activities, if any, they wish to engage in.

Earlier in the physical development section, we discussed **primary and secondary sex characteristics**. During puberty, every primary sex organ (the ovaries, uterus, penis, and testes) increases dramatically in size and matures in function. During puberty, reproduction becomes possible. Simultaneously, secondary sex characteristics develop. These characteristics are not required for

reproduction, but they do signify masculinity and femininity. At birth, boys and girls have similar body shapes, but during puberty, males widen at the shoulders and females widen at the hips and develop breasts (examples of secondary sex characteristics). Sexual development is impacted by a dynamic mixture of physical and cognitive change coupled with social expectations. With physical maturation, adolescents may become alternately fascinated with and chagrined by their changing bodies, and often compare themselves to the development they notice in their peers or see in the media. For example, many adolescent girls focus on their breast development, hoping their breasts will conform to an ideal body image.

As sex hormones cause biological changes, they also affect the brain and trigger sexual thoughts. Culture, however, shapes actual sexual behaviors. Emotions regarding sexual experience, like the rest of puberty, are strongly influenced by cultural norms regarding what is expected at what age, with peers being the most influential. Simply put, the most important influence on adolescents' sexual activity is not their bodies, but their close friends, who have more influence than do sex or ethnic group norms (van de Bongardt et al., 2015).

Sexual interest and interaction are a natural part of adolescence. Sexual fantasy and **masturbation** episodes increase between the ages of 10 and 13. Masturbation is very ordinary—even young children have been known to engage in this behavior. As the bodies of children mature, powerful sexual feelings begin to develop, and masturbation helps release sexual tension. For adolescents, masturbation is a common way to explore their erotic potential, and this behavior can continue throughout adult life.

Sexual Interactions

Many early social interactions tend to be nonsexual—text

messaging, phone calls, email—but by the age of 12 or 13, some young people may pair off and begin dating and experimenting with kissing, touching, and other physical contact, such as oral sex. The vast majority of young adolescents are not prepared emotionally or physically for oral sex and sexual intercourse. If adolescents this young do have sex, they are highly vulnerable to sexual and emotional abuse, **sexually transmitted infections (STIs)**, HIV, and early pregnancy. For STI's in particular, adolescents are slower to recognize symptoms, tell partners, and get medical treatment, which puts them at risk of infertility and even death.

Adolescents ages 14 to 16 understand the consequences of unprotected sex and teen parenthood, if properly taught, but cognitively they may lack the skills to integrate this knowledge into everyday situations or consistently to act responsibly in the heat of the moment. By the age of 17, many adolescents have willingly experienced sexual intercourse. Teens who have early sexual intercourse report strong peer pressure as a reason behind their decision. Some adolescents are just curious about sex and want to experience it.

Becoming a sexually healthy adult is a developmental task of adolescence that requires integrating psychological, physical, cultural, spiritual, societal, and educational factors. It is particularly important to understand the adolescent in terms of his or her physical, emotional, and cognitive stage. Additionally, healthy adult relationships are more likely to develop when adolescent impulses are not shamed or feared. Guidance is certainly needed, but acknowledging that adolescent sexuality development is both normal and positive would allow for more open communication so adolescents can be more receptive to education concerning the risks (Tolman & McClelland, 2011).

Adolescents are receptive to their culture, to the models they see at home, in school, and in the mass media. These observations influence moral reasoning and moral behavior, which we discuss in more detail later in this module. Decisions regarding sexual behavior are influenced by teens' ability to think and reason, their

values, and their educational experience. Helping adolescents recognize all aspects of sexual development encourages them to make informed and healthy decisions about sexual matters.

Teenage Sexual Activity Trends

Teenagers are much more sexually active today than they were before the sexual revolution of the 1960s and 70s. About 43 percent of never-married teens ages 15–19 of both sexes have had sexual intercourse (Martinez et al., 2011); this percentage represents a drop from its highest point, in 1988, of 51 percent for females and of 60 percent for males. About three-fourths of girls in today's sexually experienced group and 85 percent of boys in this group use contraception, most often a condom, the first time they ever have sex. In their most recent act of sexual intercourse, almost 86 percent of girls and 93 percent of boys used contraception, again most often a condom.

If 43 percent of teens have had sexual intercourse, that means the majority of teens, 57 percent, have never had intercourse. It is interesting to examine their reasons. The table below identifies the main reason given for never having sexual intercourse. The top reason for both sexes is religion and morals, followed by concern about a possible pregnancy and not having found the right person with whom to have sex (Martinez et al., 2011).

Table 1. Main Reason Given for Never Having Sexual Intercourse, Ages 15–19 (%)

	Females	Males
Against religion or morals	38	31
Don't want to get (a female) pregnant	19	25
Haven't found the right person yet	17	21
Don't want to get an STI	7	10
In a relationship, but waiting for the right time	7	5
Other reason	12	8



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The Problem of Teenage Pregnancy

Most teenage pregnancies and births are unplanned and are part of a more general problem for all women in their childbearing years. Almost 700,000 unplanned teenage pregnancies occur annually; another 50,000 teenage pregnancies are planned. These 750,000 teenage pregnancies annually result in some 400,000 births (Kost, Henshaw, & Carlin, 2010). Altogether, about 18 percent of women, or one of every six females, become teen mothers, and in several southern and southwestern states, this percentage is as high as 25–30 percent (Perper & Manlove, 2009).

The birth rate for females aged 15–19 in 2009 was 39.1 births per 1,000 females. This rate represented a substantial decline from the early 1990s when the rate reached a peak of almost 60. However, it

was still twice as high as Canada's rate and much higher yet than other Western democracies (Figure 1).

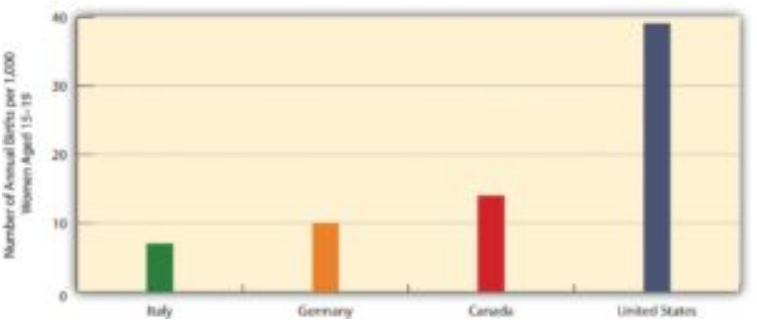


Figure 1. Teenage Birth Rates in Selected Western Democracies

Although teenaged pregnancies (and births from these pregnancies) are far from the majority of all pregnancies, unplanned or planned, they pose special problems (American College of Obstetricians and Gynecologists, 2011; Anderson, 2011). On the individual level, pregnant teenagers are more at risk than older pregnant women for high blood pressure and anemia, and they are also more likely to experience early labor, premature birth, and low birth weight. In addition, because teenagers are more likely than adults to have STIs, pregnant teenagers are more likely than older pregnant women to have an STI while they are pregnant, either because they already had an STI when they conceived or because they contract an STI from having sex during pregnancy.

Many pregnant teenagers decide to drop out of school. If they stay in school, they often must deal with the embarrassment of being pregnant, and the physical and emotional difficulties accompanying their teenage pregnancy can affect their school performance. Once the baby is born, child care typically becomes an enormous problem, whether or not the new mother is in school. Because pregnant teenagers disproportionately come from families

that are poor or near-poor, they have few financial resources and often have weak social support networks, either before or after the baby is born (Andrews & Moore, 2011).

At the societal level, teenage pregnancy and motherhood are very costly in at least two important respects. First, because pregnancy and childbirth complications are more common among teenagers, their health-care expenses during and after pregnancy and childbirth are often higher than the expenses incurred by older women. Medicaid, the federal government's national health plan for poor families, often covers much of these expenses, and the premiums that private health insurance companies charge are higher than otherwise because of their expenses when they insure the families of pregnant teenagers.

Second, the children of teenage mothers are at risk for several kinds of behavioral and developmental problems. Teenage parents may be unprepared emotionally or practically to raise a child. Children of teen parents may receive less cognitive stimulation and proper emotional support. In addition, the stress they experience as young parents put them at risk of neglecting or abusing their children. Teenage parents also tend to come from low-income families and continue to live in poverty or near poverty after they become mothers compounds all these problems. For all these reasons, the children of teenage mothers are at greater risk for several kinds of issues. These problems include impaired neurological development, behavioral problems, poor school performance, and chronic health problems.

Reducing Teenage Pregnancy

In an effort to reduce teenage pregnancies, two approaches have been used: (1) Emphasize abstinence, convincing teens to hold off on having sex until adulthood or marriage, and (2) comprehensive sex education, including teaching the effective use of contraception

if they do have sex. Most sexual behavior researchers believe that pleas for abstinence, as well as sex education programs that focus solely or almost entirely on abstinence, do not help to reduce teen sex and pregnancy (Ball & Moore, 2008).

Comprehensive sex education is based on the strategy of harm reduction. A harm reduction approach recognizes that because certain types of harmful behavior are inevitable, our society should do its best to minimize the various kinds of harm that these various behaviors generate. In regard to teenage sex and pregnancy, a harm reduction approach has two goals: (1) to help reduce the risk for pregnancy among sexually active teens and (2) to help teenage parents and their children.

To achieve the first goal, parents, sex education classes, family planning clinics, youth development programs, and other parties must continue to emphasize the importance of waiting to have sex but also the need for teenagers to use contraception if they are sexually active. In addition, effective contraception (birth control pills, other hormonal control, and even condoms, which protect against STIs) must be made available for teenagers at little or no cost. Studies indicate that these two contraception strategies do not lead to more teenage sex, and they also indicate that consistent contraceptive use dramatically reduces the risk of teenage pregnancy. As one writer has summarized these studies' conclusions, "Contraceptives no more cause sex than umbrellas cause rain…When contraception is unavailable, the likely consequences is not less sex, but more pregnancy" (Kristof, 2011, p. A31).

In this regard, a recent report of the Guttmacher Institute called contraception a "proven, cost-effective strategy" (Gold, 2011, p. 7). It added, "Contraception is almost universally accepted as a way to reduce the risk of unintended pregnancy…Contraceptive use reduces the risk of unintended pregnancy significantly, and consistent contraceptive use virtually eliminates it." The report noted that government-funded family planning agencies prevent 2 million unintended pregnancies annually by providing

contraception to 9 million young and low-income women each year. Because most of the women who would have these prevented pregnancies would be eligible for Medicaid, the Medicaid savings from these prevented pregnancies amount to about $7 billion annually. An expansion of family planning services would almost certainly be an effective strategy for reducing teenage pregnancies as well as unplanned pregnancies among older women.

Another strategy to prevent teenage pregnancy involves the use of early childhood intervention (ECI) programs. Many such programs exist, but they generally include visits by social workers, nurses, and other professionals to the homes of children who are at risk for neurological, emotional, and/or behavioral problems during their first several years and also as they grow into adolescents and young adults (Kahn & Moore, 2010). It might sound like a stereotype, but these children are disproportionately born to single, teenage mothers and/or to slightly older parents who live in poverty or near poverty. Long-term evaluation studies show that the best of these programs reduce the likelihood that the very young children they help will become pregnant or have children of their own after they become teenagers (Ball & Moore, 2008). In effect, assisting young children to today helps prevent teenage pregnancy tomorrow.

The second prong to this harm reduction strategy targets teenage parents and their children. Because teen pregnancies occur despite the best prevention efforts, the second goal of a harm reduction approach is to help teens during their pregnancy and after childbirth. This strategy has the immediate aim of providing practical and emotional support for these very young mothers; it also has the longer-term goals of reducing repeat pregnancies and births and of preventing developmental and behavior problems among their children.

To achieve these aims, Early Childhood Intervention programs have again been shown to be helpful (Ball & Moore, 2008). Another type of program to help teen mothers involves the use of second-chance homes, which are maternity group homes for unmarried teen mothers (Andrews & Moore, 2011). One of the many sad facts

of teenage motherhood is that teen mothers often have nowhere to live. A teen mother's parent(s) may refuse to let her and her infant live with them, either because they are angry at her pregnancy or because they simply do not have the room or financial means to house and take care of a baby. Or a pregnant teen may decide to leave her parents' home because of the parents' anger or because they refuse to let her continue seeing the child's father. In another possibility, a teen mother may begin living with the father, but these unions are typically unstable and often end, again leaving her and her child without a home. As well, many teen mothers were runaways from home before they became pregnant or were living in foster care. Because of all these situations, many teen mothers find themselves without a place to live.

In second-chance homes (which, depending on the program, are in reality one large house, a set of apartments, or a network of houses), mothers and children (as well as pregnant teens) receive shelter and food, but they also receive essential services, such as childrearing help, educational and vocational counseling and training, family planning counseling, and parenting classes. Although rigorous evaluation studies do not yet exist on the effectiveness of second-chance homes, they do seem to offer a valuable resource for teen mothers and their children (Andrews & Moore, 2011).

A final strategy for addressing the problem of teenage sex and pregnancy is to address a more general societal condition that helps produce teenage sex and pregnancy. This condition is poverty. As noted earlier, children who grow up in poor families and in disadvantaged neighborhoods—those with high rates of poverty, unemployment, high school dropouts, and so forth—are more likely to have sex earlier as teens and to become pregnant (Harding, 2003; Scott, Steward-Streng, Barry, & Manlove, 2011).

Sexually Transmitted Infections

In addition to pregnancy and birth, another problem associated with teenage sexual activity is the transmission of sexually transmitted infections (STIs). This is a problem during the teenage years, but it is even more of a problem during young adulthood, when sexual activity is higher than during adolescence (Wildsmith, Schelar, Peterson, & Manlove, 2010). The STI rate in the United States is higher than in most other Western democracies. Almost 19 million new cases of STIs are diagnosed annually, and more than 65 million Americans have an incurable STI, such as herpes. Although teens and young adults ages 15–24 compose only one-fourth of sexually active people, they account for one-half of all new STIs. Despite this fact, most young adults who test positive for an STI did not believe they were at risk of getting an STI (Wildsmith et al., 2010).

In any one year, 15 percent of young adults ages 18 and 26 have an STI. This figure masks a significant gender difference: 20 percent of young women have had an STI in the past year, compared to 10 percent of young men. It also masks important racial/ethnic differences: 34 percent of young African Americans have had an STI in the past year, compared to 10 percent of Asians, 15 percent of Hispanics, and 10 percent of whites.

Three types of sexual behaviors increase the risk of transmitting or contracting an STI: having sex with at least three partners during the past year, having a sex partner with a known STI, and not using a condom regularly. About 17 percent of sexually active young adults have had at least three partners during the past year, and 8 percent have had a partner with a known STI. Three-fourths of unmarried sexually active young adults do not use a condom regularly. Combining all these risk factors, 39 percent have engaged in one risk factor in the past year, 14 percent have engaged in at least two risk factors, and the remainder, 48 percent, have engaged in no risk factors (Wildsmith et al., 2010).

Think About It

1. Imagine that you became a parent at age 17. How would your life have been different from what it is now?
2. Many sexually active teenagers do not use contraception regularly. Why do you think they do not use it more often?

Health and Nutrition

Immunizations

Preventing communicable diseases from early infancy is one of the major tasks of the Public Health System in the USA. Infants mouth every single object they find as one of their typical developmental tasks. They learn through their senses and tasting objects stimulates their brain and provides a sensory experience as well as learning.

Infants have much contact with dirty surfaces. They lay on a carpet that most likely has been contaminated by adults walking on it; they mouth keys, rattles, toys, and books; they crawl on the floor; they hold on to furniture to walk, and much more. How do we prevent infants from getting sick? One possible answer is **immunizations**.

Watch It

Video 1. Watch the selected first ten minutes of this video clip from the Alexander Street Database that illustrates what now has become the vaccine war.



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Many decades ago, our society struggled to find vaccines and cures for illnesses such as Polio, whooping cough, and many other medical conditions. A few decades ago parents started changing their minds on the need to vaccinate children. Some children are not vaccinated for valid medical reasons, but some states allow a child to be unvaccinated because of a parent's personal or religious beliefs. At least 1 in 14 children is not vaccinated. What is the outcome of not vaccinating children? Some of the preventable illnesses are returning. Fortunately, each vaccinated child stops the transmission of the disease, a phenomenon called *herd immunity*. Usually, if 90% of the people in a community (a herd) are immunized, no one dies of that disease.

In 2017, Community Care Licensing in California, the agency that regulates childcare centers, changed regulations. Before it was possible for parents to opt-out of vaccinations due to personal beliefs, but this changed after Governor Brown signed a Bill in 2016 to only exclude children from being vaccinated if there were medical reasons. Furthermore, all personnel working with children must be immunized.

Link to Learning

Read more information about vaccinations at the website **Shots for School.**

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Infant Nutrition

Good nutrition in a supportive environment is vital for an infant's healthy growth and development. Remember, from birth to 1 year, infants triple their weight and increase their height by half, and this growth requires good nutrition. For the first 6 months, babies are fed breast milk or formula. Starting good nutrition practices early can help children develop healthy dietary patterns. Infants need to receive nutrients to fuel their rapid physical growth. **Malnutrition** during infancy can result in not only physical but also cognitive and social consequences. Without proper nutrition, infants cannot reach their physical potential.

Breastfeeding



Figure 1. *Breastmilk changes in composition with a newborn's development and needs.*

Breast milk is considered the ideal diet for newborns due to the nutrition makeup of colostrum and subsequent breastmilk production. **Colostrum,** the milk produced during pregnancy and just after birth, has been described as "liquid gold. Colostrum is packed with nutrients and other important substances that help the infant build up his or her immune system. Most babies will get all the nutrition they need through colostrum during the first few days of life (CDC, 2018). Breast milk changes by the third to fifth day after birth, becoming much thinner, but containing just the right amount of fat, sugar, water, and proteins to support overall physical and neurological development. It provides a source of iron more easily absorbed in the body than the iron found in dietary supplements, it provides resistance against many diseases, it is more easily digested by infants than formula, and it helps babies make a transition to solid foods more easily than if bottle-fed.

The reason infants need such a high-fat content is the process of myelination which requires fat to insulate the neurons. Therefore, there has been some research, including meta-analyses, to show that breastfeeding is connected to advantages with cognitive development (Anderson, Johnstone, & Remley, 1999). Low birth weight infants had the greatest benefits from breastfeeding than did normal-weight infants in a meta-analysis that of twenty controlled studies examining the overall impact of breastfeeding (Anderson et al., 1999). This meta-analysis showed that breastfeeding may provide nutrients required for rapid development of the immature brain and be connected to more rapid or better development of neurologic

function. The studies also showed that a longer duration of breastfeeding was accompanied by greater differences in cognitive development between breastfed and formula-fed children. Whereas normal-weight infants showed a 2.66-point difference, low-birth-weight infants showed a 5.18-point difference in IQ compared with weight-matched, formula-fed infants (Anderson et al, 1999). These studies suggest that nutrients present in breast milk may have a significant effect on neurologic development in both premature and full-term infants.

For most babies, breast milk is also easier to digest than formula. Formula-fed infants experience more diarrhea and upset stomachs. The absence of antibodies in formula often results in a higher rate of ear infections and respiratory infections. Children who are breastfed have lower rates of childhood leukemia, asthma, obesity, type 1 and 2 diabetes, and a lower risk of SIDS. For all of these reasons, it is recommended that mothers breastfeed their infants until at least 6 months of age and that breast milk be used in the diet throughout the first year (U.S. Department of Health and Human Services, 2004a in Berk, 2007).

Several recent studies have reported that it is not just babies that benefit from breastfeeding. Breastfeeding stimulates contractions in the uterus to help it regain its normal size, and women who breastfeed are more likely to space their pregnancies farther apart. Mothers who breastfeed are at lower risk of developing breast cancer, especially among higher-risk racial and ethnic groups (Islami et al., 2015). Other studies suggest that women who breastfeed have lower rates of ovarian cancer (Titus-Ernstoff, Rees, Terry, & Cramer, 2010), and reduced risk for developing Type 2 diabetes (Gunderson, et al., 2015), and rheumatoid arthritis (Karlson, Mandl, Hankinson, & Grodstein, 2004).

A historic look at breastfeeding

The use of wet nurses, or lactating women, hired to nurse others' infants, during the middle ages eventually declined, and mothers increasingly breastfed their own infants in the late 1800s. In the early part of the 20th century, breastfeeding began to go through another decline, and by the 1950s it was practiced less frequently by middle class, more affluent mothers as formula began to be viewed as superior to breast milk. In the late 1960s and 1970s, there was again a greater emphasis placed on natural childbirth and breastfeeding and the benefits of breastfeeding were more widely publicized. Gradually, rates of breastfeeding began to climb, particularly among middle-class educated mothers who received the strongest messages to breastfeed.

Today, new mothers receive consultation from lactation specialists before being discharged from the hospital to ensure that they are informed of the benefits of breastfeeding and given support and encouragement to get their infants accustomed to taking the breast. This does not always happen immediately, and first-time mothers, especially, can become upset or discouraged. In this case, lactation specialists and nursing staff can encourage the mother to keep trying until the baby and mother are comfortable with the feeding.

Most mothers who breastfeed in the United States stop breastfeeding at about 6-8 weeks, often in order to return to work outside the home (United States Department of Health and Human Services (USDHHS), 2011). Mothers can certainly continue to

provide breast milk to their babies by expressing and freezing the milk to be bottle fed at a later time or by being available to their infants at feeding time, but some mothers find that after the initial encouragement they receive in the hospital to breastfeed, the outside world is less supportive of such efforts. Some workplaces support breastfeeding mothers by providing flexible schedules and welcoming infants, but many do not. And the public support of breastfeeding is sometimes lacking. Women in Canada are more likely to breastfeed than are those in the United States, and the Canadian health recommendation is for breastfeeding to continue until 2 years of age. Facilities in public places in Canada such as malls, ferries, and workplaces provide more support and comfort for the breastfeeding mother and child than found in the United States.

In addition to the nutritional and health benefits of breastfeeding, breast milk is free! Anyone who has priced formula recently can appreciate this added incentive to breastfeeding. Prices for a month's worth of formula can easily range from $130-$200. Prices for a year's worth of formula and feeding supplies can cost well over $1,500 (USDHHS, 2011).

Links to Learning

- Watch this video from the Psych SciShow "Bad Science: Breastmilk and Formula" to learn about research related to both breastfeeding and formula-feeding.
- To learn more about breastfeeding, visit this resource from the U.S. Department of Health and Human Resources: Your Guide to Breastfeeding.
- Visit Kids Health on Breastfeeding vs. Formula Feeding to learn more about the benefits and

challenges of each. Click on the speaker icon to listen to the narration of the article if you would like.



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When Breastfeeding Doesn't Work

There are occasions where mothers may be unable to breastfeed babies, often for a variety of health, social, and emotional reasons. For example, breastfeeding generally does not work:

- when the baby is adopted
- when the biological mother has a transmissible disease such as tuberculosis or HIV
- when the mother is addicted to drugs or taking any medication that may be harmful to the baby (including some types of birth control)
- when the infant was born to (or adopted by) a family with two fathers and the surrogate mother is not available to breastfeed
- when there are attachment issues between mother and baby
- when the mother or the baby is in the Intensive Care Unit (ICU) after the delivery process
- when the baby and mother are attached but the mother does

not produce enough breast-milk

One early argument given to promote the practice of breastfeeding (when health issues are not the case) is that it promotes bonding and healthy emotional development for infants. However, this does not seem to be a unique case. Breastfed and bottle-fed infants adjust equally well emotionally (Ferguson & Woodward, 1999). This is good news for mothers who may be unable to breastfeed for a variety of reasons and for fathers who might feel left out as a result.

Introducing Solid Foods

Breast milk or formula is the only food a newborn needs, and the American Academy of Pediatrics recommends exclusive breastfeeding for the first six months after birth. Solid foods can be introduced from around six months onward when babies develop stable sitting and oral feeding skills but should be used only as a supplement to breast milk or formula. By six months, the gastrointestinal tract has matured, solids can be digested more easily, and allergic responses are less likely. The infant is also likely to develop teeth around this time, which aids in chewing solid food. Iron-fortified infant cereal, made of rice, barley, or oatmeal, is typically the first solid introduced due to its high iron content. Cereals can be made of rice, barley, or oatmeal. Generally, salt, sugar, processed meat, juices, and canned foods should be avoided.

Though infants usually start eating solid foods between 4 and 6 months of age, more and more solid foods are consumed by a growing toddler. Pediatricians recommended introducing foods one at a time, and for a few days, in order to identify any potential food allergies. Toddlers may be picky at times, but it remains important to introduce a variety of foods and offer food with essential vitamins and nutrients, including iron, calcium, and vitamin D.

Milk Anemia in the United States

About 9 million children in the United States are malnourished (Children's Welfare, 1998). More still suffer from **milk anemia**, a condition in which milk consumption leads to a lack of iron in the diet. The prevalence of iron deficiency anemia in 1- to 3-year-old children seems to be increasing (Kazal, 2002). The body gets iron through certain foods. Toddlers who drink too much cow's milk may also become anemic if they are not eating other healthy foods that have iron. This can be due to the practice of giving toddlers milk as a pacifier when resting, riding, walking, and so on. Appetite declines somewhat during toddlerhood and a small amount of milk (especially with added chocolate syrup) can easily satisfy a child's appetite for many hours. The calcium in milk interferes with the absorption of iron in the diet as well. There is also a link between iron deficiency anemia and diminished mental, motor, and behavioral development. In the second year of life, iron deficiency can be prevented by the use of a diversified diet that is rich in sources of iron and vitamin C, limiting cow's milk consumption to less than 24 ounces per day, and providing a daily iron-fortified vitamin.

Global Considerations and Malnutrition



***Figure 2**. These children are showing the extended abdomen characteristic of kwashiorkor (Photo Courtesy CDC).*

In the 1960s, formula companies led campaigns in developing countries to encourage mothers to feed their babies on infant formula. Many mothers felt that formula would be superior to breast milk and began using formula. The use of formula can certainly be healthy under conditions in which there is adequate, clean water with which to mix the formula and adequate means to sanitize bottles and nipples. However, in many of these countries, such conditions were not available and babies often were given diluted, contaminated formula which made them become sick with diarrhea and become dehydrated. These conditions continue today and now many hospitals prohibit the distribution of formula samples to new mothers in efforts to get them to rely on breastfeeding. Many of these mothers do not understand the benefits of breastfeeding and have to be encouraged and supported in order to promote this practice.

The World Health Organization (2018) recommends:

- initiation of breastfeeding within one hour of birth
- exclusive breastfeeding for the first six months of life
- introduction of solid foods at six months together with continued breastfeeding up to two years of age or beyond

Link to Learning

Breastfeeding could save the lives of millions of infants each year, according to the World Health Organization (WHO), yet fewer than 40 percent of infants are breastfed exclusively for the first 6 months of life. Most women can breastfeed unless they are receiving chemotherapy or radiation therapy, have HIV, are dependent on illicit drugs, or have active untreated tuberculosis. Because of the great benefits of breastfeeding, WHO, UNICEF, and other national organizations are working together with the government to step up support for breastfeeding globally.

Find out more statistics and recommendations for breastfeeding at the WHO's 10 facts on breastfeeding. You can also learn more about efforts to promote breastfeeding in Peru: "Protecting Breastfeeding in Peru".

Children in developing countries and countries experiencing the harsh conditions of war are at risk for two major types of malnutrition. **Infantile marasmus** refers to starvation due to a lack of calories and protein. Children who do not receive adequate nutrition lose fat and muscle until their bodies can no longer function. Babies who are breastfed are much less at risk of malnutrition than those who are bottle-fed. After weaning, children who have diets deficient in protein may experience **kwashiorkor,** or the "disease of the displaced child," often occurring after another child has been born and taken over breastfeeding. This results in a loss of appetite and swelling of the abdomen as the body begins to break down the vital organs as a source of protein.

Watch It

Video 2. Watch this video to learn more about the signs and symptoms of kwashiorkor and marasmus.

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Nutritional Concerns in Childhood



Figure 3. *While young children can be picky eaters, it is important to expose them to a variety of healthy foods and avoid too many high-fat or low-nutritional foods, such as corndogs.*

According to the Centers for Disease Control and Prevention (CDC), 1 in 5 American children between the ages of 2 and 5 are overweight or obese. The American Academy of Pediatrics (AAP) recommends a number of steps to take to help reduce the chances of obesity in young children. Removing high-calorie low-nutrition foods from the diet, offering whole fruits and vegetables instead of just juices, and getting kids active are just some of the recommendations that they make. Muckelbauer and colleagues (2009) found that increasing water consumption in school-aged children by just 220ml (just under 8 oz) per day decreased the risk of obesity by 31%. Finally, the AAP suggests that parents can begin offering milk with a lower fat percentage (2%, 1%, or skim milk) to 2-year-olds. The switch to lower fat milk may help avoid some of the obesity issues discussed above. Parents should avoid giving the child too much milk as calcium interferes with the absorption of iron in the diet as well.

Caregivers (whether parents or non-parents) need to keep in mind that they are setting up taste preferences at this age. Young children who grow accustomed to high-fat, very sweet, and salty flavors may have trouble eating foods that have more subtle flavors such as fruits and vegetables. Lack of a healthy diet may lead to obesity during this and future stages. Offering a diet of diverse food options, limiting foods with high calories but low nutritional value, and limiting high-calorie drink options can all contribute greatly to a child's health during this stage of life.

Caregivers who have established a feeding routine with their child

can find the normal reduction in appetite a bit frustrating and become concerned that the child is going to starve. However, by providing adequate, sound nutrition, and limiting sugary snacks and drinks, the caregiver can be assured that 1) the child will not starve, and 2) the child will receive adequate nutrition. Preschoolers can experience iron deficiencies if not given well-balanced nutrition.

Tips for Establishing Healthy Eating Patterns

Consider the following advice about establishing eating patterns for years to come (Rice, F.P., 1997). Notice that keeping mealtime pleasant, providing sound nutrition, and not engaging in power struggles over food are the main goals.

1. Don't try to force your child to eat or fight over food. Of course, it is impossible to force someone to eat. But the real advice here is to avoid turning food into some kind of ammunition during a fight. Do not teach your child to eat to or refuse to eat in order to gain favor or express anger toward someone else.

2. Recognize that appetite varies. Children may eat well at one meal and have no appetite at another. Rather than seeing this as a problem, it may help to realize that appetites do vary. Continue to provide good nutrition, but do not worry excessively if the child does not eat.

3. Keep it pleasant. This tip is designed to help caregivers create a positive atmosphere during mealtime. Mealtimes should not be the time for

arguments or expressing tensions. You do not want the child to have painful memories of mealtimes together or have nervous stomachs and problems eating and digesting food due to stress.

4. No short-order chefs. While it is fine to prepare foods that children enjoy, preparing a different meal for each child or family member sets up an unrealistic expectation from others. Children probably do best when they are hungry and a meal is ready. Limiting snacks rather than allowing children to "graze" continuously can help create an appetite for whatever is being served.

5. Limit choices. If you give your preschool-aged child choices, make sure that you give them one or two specific choices rather than asking "What would you like for lunch?" If given an open choice, children may change their minds or choose whatever their sibling does not choose!

6. Serve balanced meals. This tip encourages caregivers to serve balanced meals. A box of macaroni and cheese is not a balanced meal. Meals prepared at home tend to have better nutritional value than fast food or frozen dinners. Prepared foods tend to be higher in fat and sugar content as these ingredients enhance taste and profit margin because fresh food is often more costly and less profitable. However, preparing fresh food at home is not costly. It does, however, require more activity. Preparing meals and including the children in kitchen

chores can provide a fun and memorable experience.

7. Don't bribe. Bribing a child to eat vegetables by promising dessert is not a good idea. For one reason, the child will likely find a way to get the desert without eating the vegetables (by whining or fidgeting, perhaps, until the caregiver gives in), and for another reason, because it teaches the child that some foods are better than others. Children tend to naturally enjoy a variety of foods until they are taught that some are considered less desirable than others. A child, for example, may learn the broccoli they have enjoyed is seen as yucky by others unless it's smothered in cheese sauce!

To what extent do these tips address cultural practices? How might these tips vary by culture?



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Childhood Obesity

Nearly 20 percent of school-aged American children are obese. This

is defined as being at least 20 percent over their ideal weight. The percentage of obesity in school-aged children has increased substantially since the 1960s, and it continues to increase. This is true in part because of the introduction of a steady diet of television and other sedentary activities. In addition, we have come to emphasize high fat, fast foods as a culture. Pizza, hamburgers, chicken nuggets, and "Lunchables" with soda have replaced more nutritious foods as staples.

School Lunches

School lunches must meet the applicable recommendations of the Dietary Guidelines for Americans. These guidelines state that no more than 30 percent of an individual's calories should come from fat and less than 10 percent from saturated fat. Regulations also state that school lunches must provide one-third of the recommended dietary allowances of protein, Vitamin A, Vitamin C, iron, calcium, and calories. School lunches must meet federal nutrition requirements over the course of one week's worth of lunches. However, local school food authorities may make decisions about which specific foods to serve and how they are prepared.

Many children in the United States buy their lunches in the school cafeteria, so it might be worthwhile to look at the nutritional content of school lunches. You can obtain this information through your local school district's website. An example of a school menu and nutritional analysis from a school district in north-central Texas is a meal consisting of pasta alfredo, breadstick, peach cup, tomato soup, and a brownie, and 2% milk. Students may

also purchase chips, cookies, or ice cream along with their meals. Many school districts rely on the sale of dessert and other items in the lunchrooms to make additional revenues and many children purchase these additional items so our look at their nutritional intake should also take this into consideration.

Consider another menu from an elementary school in the state of Washington. This sample meal consists of a chicken burger, tater tots, fruit and veggies, and 1% or nonfat milk. This meal is also in compliance with Federal Nutrition Guidelines but has about 300 fewer calories. And, children are not allowed to purchase additional desserts such as cookies or ice cream.

Michelle Obama has been a recent advocate for nutritional school lunches. Since the Healthy, Hunger-Free Act of 2010, she has worked diligently to defend the importance of healthy school lunches but has largely not been successful in her efforts. Schools in the United States are having difficulty enforcing nutrition values in fear of being wasteful because some of the new standards such as whole grains, more vegetables, and reduced sodium levels initially resulted in fewer children eating their lunches. Children are eating 16% more vegetables and 23% more fruit during lunches, and over 90% of schools report that they are meeting the new nutritional guidelines.

One consequence of childhood obesity is that children who are overweight tend to be ridiculed and teased by others. This can certainly be damaging to their self-image and popularity. In addition, obese children run the risk of suffering orthopedic problems such as knee injuries, and an increased risk of heart disease and stroke in adulthood. It may be difficult for a child who

is obese to become a non-obese adult. In addition, the number of cases of pediatric diabetes has risen dramatically in recent years.

Dieting is not really the solution to childhood obesity. If your diet, your basal metabolic rate tends to decrease thereby making the body burn even fewer calories in order to maintain the weight. Increased activity is much more effective in lowering the weight and improving the child's health and psychological well-being. Exercise reduces stress and being an overweight child, subjected to the ridicule of others can certainly be stressful. Parents should take caution against emphasizing diet alone to avoid the development of any obsession about dieting that can lead to eating disorders as teens. Again, increasing a child's activity level is most helpful.

Exercise and Sports



Figure 4. *Organized sports like soccer are especially popular during middle childhood.*

Middle childhood seems to be a great time to introduce children to organized sports, and in fact, many parents do. Nearly 3 million children play soccer in the United States (United States Youth Soccer, 2012). This activity promises to help children build social skills, improve athletically, and learn a sense of competition. However, it has been suggested that the emphasis on competition and athletic abilities can be counterproductive and lead children to grow tired of the game and want to quit. In many respects, it appears that children's activities are no longer children's activities once adults become involved and approach the games as adults rather than children. The U. S. Soccer Federation recently advised coaches to reduce the amount of drilling engaged in during practice and to allow children to play more freely and to choose their own positions.

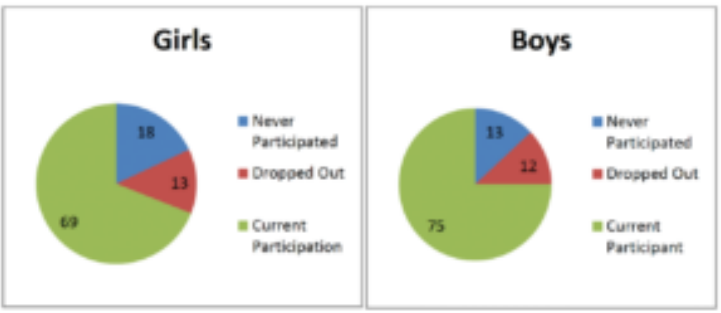
The hope is that this will build on their love of the game and foster their natural talents.

Sports are important for children. Children's participation in sports has been linked to:

- Higher levels of satisfaction with family and overall quality of life in children
- Improved physical and emotional development
- Better academic performance

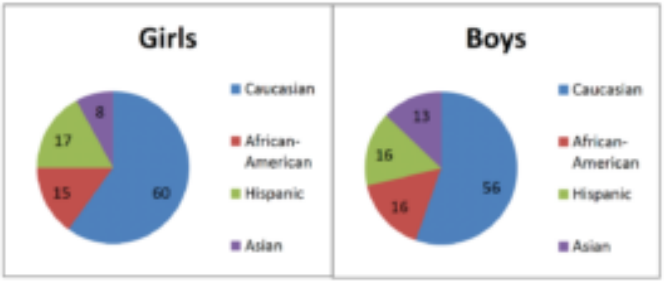
Yet, a study on children's sports in the United States (Sabo & Veliz, 2008) has found that gender, poverty, location, ethnicity, and disability can limit opportunities to engage in sports. Girls were more likely to have never participated in any type of sport (see Figure 5). They also found that fathers may not be providing their daughters as much support as they do their sons.

While boys rated their fathers as their biggest mentor who taught them the most about sports, girls rated coaches, and physical education teachers as their key mentors. Sabo and Veliz also found that children in suburban neighborhoods had much higher participation in sports than boys and girls living in rural or urban centers. In addition, Caucasian girls and boys participated in organized sports at higher rates than minority children (see Figure 6).



Total girls (n=1051). Total boys (n=1081)
t-test comparing gender and students who have never participated in sports. t=-3.038**, p=.002, df=2130

Figure 5. Participation in organized sports (%) by gender.



Girls – Caucasian (n=425); African-American (n=106); Hispanic (n=124); Asian (n=55)
Boys – Caucasian (n=435); African-American (n=127); Hispanic (n=123); Asian (n=99)

Figure 6. Participation in organized sports (%) by race and ethnicity.

Finally, Sabo and Veliz asked children who had dropped out of organized sports why they left. For both girls and boys, the number one answer was that it was no longer any fun (see Table 1). According to the Sports Policy and Research Collaborative (SPARC) (2013), almost 1 in 3 children drop out of organized sports, and while there are many factors involved in the decisions to drop out, one suggestion has been the lack of training that coaches of children's sports receive may be contributing to this attrition (Barnett, Smoll & Smith, 1992). Several studies have found that when coaches receive proper training, the drop-out rate is about 5% instead of the usual 30% (Fraser-Thomas, Côté, & Deakin, 2005; SPARC, 2013).

Table 1. Top reasons dropped out or stopped playing organized sports by gender

Girls		Boys	
I was not having fun	38%	I was not having fun	39%
I wanted to focus more on studying and grades	36%	I had a health problem or injury	29%
I had a health problem or injury	27%	I wanted to focus more on studying and grades	26%
I wanted to focus more on other clubs or activities	22%	I did not like or get along with the coach	22%
I did not like or get along with the coach	18%	I wanted to focus more on other clubs or activities	18%
I did not like or get along with others on the team	16%	I did not like or get along with others on the team	16%
I was not a good enough player	15%	I was not a good enough player	15%
My family worried about me getting hurt or injured while playing sports	14%	My family worried about me getting hurt or injured while playing sports	12%

Source: Sabo, D., & Veliz, P. (2008). Go Out and Play: Youth Sports in America. East Meadows, NY: Women's Sports

Welcome to the World of E-Sports

The recent SPARC (2016) report on the "State of Play" in the United States highlights a disturbing trend. One in four children between the ages of 5 and 16 rate playing computer games with their friends as a form of exercise. In addition, **e-sports**, which as SPARC writes, is about as much a sport as poker, *involves children watching other children play video games*. over half of males, and about 20% of females, aged 12-19, say they are fans of e-sports.

Since 2008 there has also been a downward trend in the number of sports children are engaged in, despite a body of research evidence that suggests that specializing in only one activity can increase the chances of injury while playing multiple sports is protective (SPARC, 2016). A University of Wisconsin study found that 49% of athletes who specialized in a sport experienced an injury compared with 23% of those who played multiple sports (McGuine, 2016).

Physical Education

For many children, physical education in school is a key component in introducing children to sports. After years of schools cutting back on physical education programs, there has been a turnaround, prompted by concerns over childhood obesity and related health issues. Despite these changes, currently, only the state of Oregon and the District of Columbia meet PE guidelines of a minimum of 150 minutes per week of physical activity in elementary school and 225 minutes in middle school (SPARC, 2016).



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Nutrition Concerns During Adolescence

Adequate adolescent nutrition is necessary for optimal growth and development. Dietary choices and habits established during adolescence greatly influence future health, yet many studies report that teens consume few fruits and vegetables and are not receiving the calcium, iron, vitamins, or minerals necessary for healthy development.

One of the reasons for poor nutrition is anxiety about **body image,** which is a person's idea of how his or her body looks. The way adolescents feel about their bodies can affect the way they feel about themselves as a whole. Few adolescents welcome their sudden weight increase, so they may adjust their eating habits to

lose weight. Adding to the rapid physical changes, they are simultaneously bombarded by messages, and sometimes teasing, related to body image, appearance, attractiveness, weight, and eating that they encounter in the media, at home, and from their friends/peers (both in-person and via social media).

Much research has been conducted on the psychological ramifications of body image on adolescents. Modern-day teenagers are exposed to more media on a daily basis than any generation before them. Recent studies have indicated that the average teenager watches roughly 1500 hours of television per year, and 70% use social media multiple times a day. As such, modern-day adolescents are exposed to many representations of ideal, societal beauty. The concept of a person being unhappy with their own image or appearance has been defined as "**body dissatisfaction**." In teenagers, body dissatisfaction is often associated with body mass, low self-esteem, and atypical eating patterns. Scholars continue to debate the effects of media on body dissatisfaction in teens. What we do know is that two-thirds of U.S. high school girls are trying to lose weight and one-third think they are overweight, while only one-sixth are actually overweight (MMWR, June 10, 2016).



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Eating Disorders

Dissatisfaction with body image can explain why many teens, mostly

girls, eat erratically or ingest diet pills to lose weight and why boys may take steroids to increase their muscle mass. Although eating disorders can occur in children and adults, they frequently appear during the teen years or young adulthood (NIMH, 2019). Eating disorders affect both genders, although rates among women are 2½ times greater than among men. Similar to women who have eating disorders, some men also have a distorted sense of body image, including **muscle dysmorphia** or an extreme concern with becoming more muscular.

Because of the high mortality rate, researchers are looking into the etiology of the disorder and associated risk factors. Researchers are finding that eating disorders are caused by a complex interaction of genetic, biological, behavioral, psychological, and social factors (NIMH, 2019). Eating disorders appear to run in families, and researchers are working to identify DNA variations that are linked to the increased risk of developing eating disorders. Researchers have also found differences in patterns of brain activity in women with eating disorders in comparison with healthy women. The main criteria for the most common eating disorders: **anorexia nervosa**, **bulimia nervosa**, and **binge-eating disorder** are described in the Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition, DSM-5 (American Psychiatric Association, 2013).



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Video 1. *Eating Disorders* explains the symptoms of anorexia

nervosa, bulimia nervosa, and binge-eating disorder, as well as common treatments.

Anorexia Nervosa

People with anorexia nervosa may see themselves as overweight, even when they are dangerously underweight. People with anorexia nervosa typically weigh themselves repeatedly, severely restrict the amount of food they eat, often exercise excessively, and/or may force themselves to vomit or use laxatives to lose weight. Anorexia nervosa has the highest mortality rate of any mental disorder. While many people with this disorder die from complications associated with starvation, others die of suicide.

Symptoms of anorexia nervosa include:

- Extremely restricted eating
- Extreme thinness (emaciation)
- A relentless pursuit of thinness and unwillingness to maintain a normal or healthy weight
- Intense fear of gaining weight
- Distorted body image, a self-esteem that is heavily influenced by perceptions of body weight and shape, or a denial of the seriousness of low body weight

Other symptoms may develop over time, including:

- Thinning of the bones (osteopenia or osteoporosis)
- Mild anemia and muscle wasting and weakness
- Brittle hair and nails
- Dry and yellowish skin
- Growth of fine hair all over the body (lanugo)
- Severe constipation
- Low blood pressure slowed breathing and pulse
- Damage to the structure and function of the heart

- Brain damage
- Multiorgan failure
- Drop-in internal body temperature, causing a person to feel cold all the time
- Lethargy, sluggishness, or feeling tired all the time
- Infertility

For those suffering from anorexia, health consequences include an abnormally slow heart rate and low blood pressure, which increases the risk of heart failure. Additionally, there is a reduction in bone density (osteoporosis), muscle loss and weakness, severe dehydration, fainting, fatigue, and overall weakness. Anorexia nervosa has the highest mortality rate of any psychiatric disorder. Individuals with this disorder may die from complications associated with starvation, while others die of suicide. In women, suicide is much more common in those with anorexia than with most other mental disorders.

Bulimia Nervosa

People with bulimia nervosa have recurrent and frequent episodes of eating unusually large amounts of food and feeling a lack of control over these episodes. This binge-eating is followed by behavior that compensates for overeating such as forced vomiting, excessive use of laxatives or diuretics, fasting, excessive exercise, or a combination of these behaviors. People with bulimia nervosa may be slightly underweight, normal weight, or overweight.

Symptoms of bulimia nervosa include:

- Chronically inflamed and sore throat
- Swollen salivary glands in the neck and jaw area
- Worn tooth enamel and increasingly sensitive and decaying teeth as a result of exposure to stomach acid
- Acid reflux disorder and other gastrointestinal problems

- Intestinal distress and irritation from laxative abuse
- Severe dehydration from purging of fluids
- Electrolyte imbalance (too low or too high levels of sodium, calcium, potassium, and other minerals) which can lead to stroke or heart attack

The binging and purging cycle of bulimia can affect the digestive system and lead to electrolyte and chemical imbalances that can affect the heart and other major organs. Frequent vomiting can cause inflammation and possible rupture of the esophagus, as well as tooth decay and staining from stomach acids. Lastly, binge eating disorder results in similar health risks to obesity, including high blood pressure, high cholesterol levels, heart disease, Type II diabetes, and gall bladder disease (National Eating Disorders Association, 2016).

Binge-Eating Disorder

People with binge-eating disorder lose control over his or her eating. Unlike bulimia nervosa, periods of binge-eating are not followed by purging, excessive exercise, or fasting. As a result, people with binge-eating disorder often are overweight or obese. Binge-eating disorder is the most common eating disorder in the U.S.

Symptoms of binge-eating disorder include:

- Eating unusually large amounts of food in a specific amount of time, such as a 2-hour period
- Eating even when you're full or not hungry
- Eating fast during binge episodes
- Eating until you're uncomfortably full
- Eating alone or in secret to avoid embarrassment
- Feeling distressed, ashamed, or guilty about your eating
- Frequently dieting, possibly without weight loss

Eating Disorders Treatment

To treat eating disorders, getting adequate nutrition, and stopping inappropriate behaviors, such as purging, are the foundations of treatment. Treatment plans are tailored to individual needs and include medical care, nutritional counseling, medications (such as antidepressants), and individual, group, and/or family psychotherapy (NIMH, 2019). For example, the Maudsley Approach has parents of adolescents with anorexia nervosa be actively involved in their child's treatment, such as assuming responsibility for feeding their child. To eliminate binge eating and purging behaviors, cognitive behavioral therapy (CBT) assists sufferers by identifying distorted thinking patterns and changing inaccurate beliefs.

Link to Learning

Visit National Eating Disorders Association to learn more about eating disorders.

Brain Development

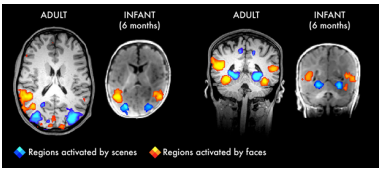


***Figure 1**. Research shows that as early at 4-6 months, infants utilize similar areas of the brain as adults to process information. Image from research article conducted by Ben Deen, Hilary Richardson, Daniel D. Dilks, Atsushi Takahashi, Boris Keil, Lawrence L. Wald, Nancy Kanwisher & Rebecca Saxe."Article | OPEN | Published: 10 January 2017 Organization of high-level visual cortex in human infants". Image retrieved from https://www.quantamagazine.org/infant-brains-reveal-how-the-mind-gets-built-20170110/.*

The nervous system is composed of two basic cell types: glial cells (also known as glia) and neurons. **Glial cells** are traditionally thought to play a supportive role to neurons, both physically and metabolically. Glial cells provide scaffolding on which the nervous system is built, help neurons line up closely with each other to allow neuronal communication, provide insulation to neurons, transport nutrients and waste products, and mediate immune responses. **Neurons**, on the other hand, serve as interconnected information processors that are essential for all of the tasks of the nervous system. This section briefly describes the structure and function of neurons.

Communication within the central nervous system (CNS), which consists of the brain and spinal cord, begins with nerve cells called **neurons**. Neurons connect to other neurons via networks of nerve fibers called **axons** and **dendrites**. Each neuron typically has a single axon and numerous dendrites that are spread out like branches of a tree (some will say it looks like a hand with fingers). The axon of each neuron reaches toward the dendrites of other neurons at intersections called **synapses**, which are critical communication links within the brain. Axons and dendrites do not touch, instead, electrical impulses in the axons cause the release of

chemicals called **neurotransmitters** which carry information from the axon of the sending neuron to the dendrites of the receiving neuron.

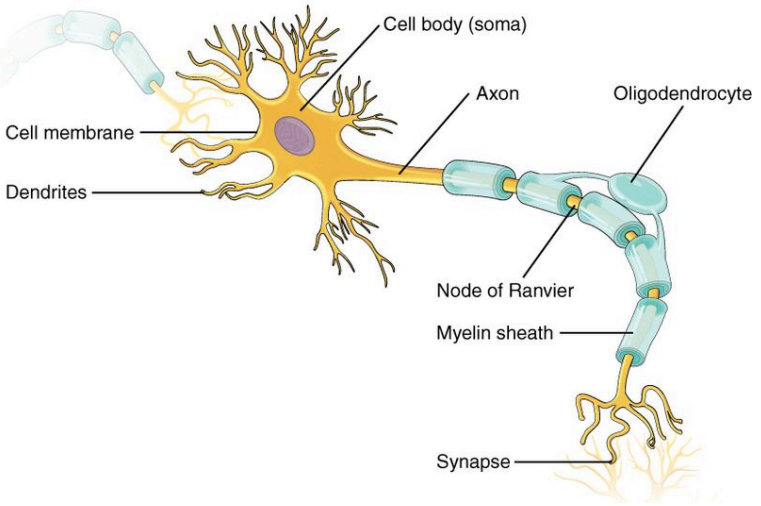


Figure 2. Neuron.

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Video 1. *The Neuron* explains the part of the neuron and the signal transmission of the neurocommunication process.

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Synaptogenesis and Synaptic Pruning

While most of the brain's 100 to 200 billion neurons are present at birth, they are not fully mature. Each neural pathway forms thousands of new connections during infancy and toddlerhood. **Synaptogenesis**, *or the formation of connections between neurons*, continues from the prenatal period forming thousands of new connections during infancy and toddlerhood. During the next several years, dendrites, or connections between neurons, will undergo a period of **transient exuberance** or temporary dramatic growth (*exuberant* because it is so rapid and *transient* because some of it is temporary). There is such a proliferation of these dendrites during these early years that by age 2 a single neuron might have thousands of dendrites.

After this dramatic increase, the neural pathways that are not used will be eliminated through a process called **synaptic pruning**, *where neural connections are reduced, thereby making those that are used much stronger*. It is thought that pruning causes the brain to function more efficiently, allowing for mastery of more complex skills (Hutchinson, 2011). Experience will shape

which of these connections are maintained and which of these are lost. Ultimately, about 40 percent of these connections will be lost (Webb, Monk, and Nelson, 2001). Transient exuberance occurs during the first few years of life, and pruning continues through childhood and into adolescence in various areas of the brain. This activity is occurring primarily in the **cortex** or the thin outer covering of the brain involved in voluntary activity and thinking.



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Video 2. *Synaptic Pruning* explains the reasons for pruning.



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Myelination

Another significant change occurring in the central nervous system

is the development of **myelin**, a coating of fatty tissues around the axon of the neuron (Carlson, 2014). myelin helps insulate the nerve cell and speed the rate of transmission of impulses from one cell to another. This increase enhances the building of neural pathways and improves coordination and control of movement and thought processes. During infancy, myelination progresses rapidly, with increasing numbers of axons acquiring myelin sheaths. This corresponds with the development of cognitive and motor skills, including language comprehension, speech acquisition, sensory processing, crawling, and walking. Myelination in the motor areas of the brain during early to middle childhood leads to vast improvements in fine and gross motor skills. Myelination continues through adolescence and early adulthood and although largely complete at this time, myelin sheaths can be added in grey matter regions such as the cerebral cortex, throughout life.



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Video 3. *Myelin* explains the formation and purpose of myelin.

Neuroplasticity

Lastly, **neuroplasticity** refers to the brain's ability to change, both physically and chemically, to enhance its adaptability to environmental change and compensate for injury. Neuroplasticity enables us to learn and remember new things and adjust to new

experiences. Both environmental experiences, such as stimulation, and events within a person's body, such as hormones and genes, affect the brain's plasticity. So too does age. Our brains are the most "plastic" when we are young children, as it is during this time that we learn the most about our environment. Adult brains demonstrate neuroplasticity, but they are influenced more slowly and less extensively than those of children (Kolb & Whishaw, 2011).



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Video 4. *Long-term Potentiation and Synaptic Plasticity* explains how learning occurs through synaptic connections and plasticity.

The control of some specific bodily functions, such as movement, vision, and hearing, is performed in specified areas of the cortex. If these areas are damaged, the individual will likely lose the ability to perform the corresponding function. For instance, if an infant suffers damage to facial recognition areas in the temporal lobe, likely, he or she will never be able to recognize faces (Farah, Rabinowitz, Quinn, & Liu, 2000). On the other hand, the brain is not divided up in an entirely rigid way. The brain's neurons have a remarkable capacity to reorganize and extend themselves to carry out particular functions in response to the needs of the organism, and to repair the damage. As a result, the brain constantly creates new neural communication routes and rewires existing ones.

The Amazing Power of Neuroplasticity

Video 5. *The Story of Jody* is a case study about a young girl that had the right hemisphere of her brain removed as a treatment for severe seizures. Due to neuroplasticity, Jody was able to recover from the damage caused by the removal of so much of her cerebrum.



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Brain Structures

At birth, the brain is about 25 percent of its adult weight, and by age two, it is at 75 percent of its adult weight. Most of the neural activity is occurring in the **cortex** or the thin outer covering of the brain involved in voluntary activity and thinking. The cortex is divided into two hemispheres, and each hemisphere is divided into four lobes, each separated by folds known as fissures. If we look at the cortex starting at the front of the brain and moving over the top, we see first the **frontal lobe** (behind the forehead), which is responsible primarily for thinking, planning, memory, and judgment. Following the frontal lobe is the **parietal lobe**, which extends from the middle

to the back of the skull and which is responsible primarily for processing information about touch. Next is the **occipital lobe**, at the very back of the skull, which processes visual information. Finally, in front of the occipital lobe, between the ears, is the **temporal lobe**, which is responsible for hearing and language.

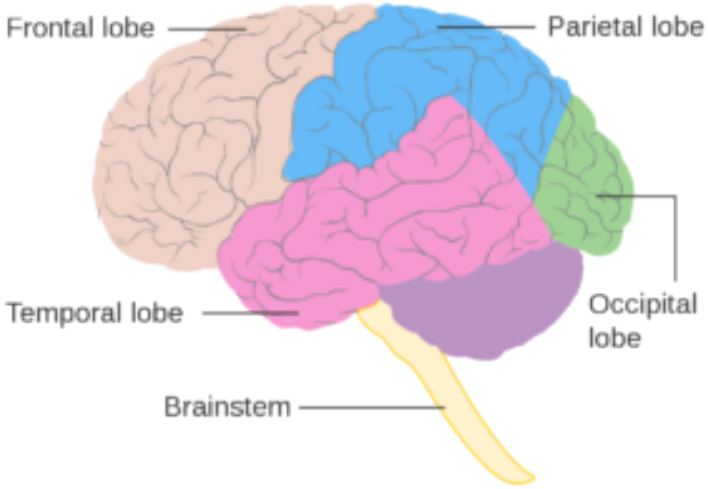


Figure 3. Lobes of the brain.

Although the brain grows rapidly during infancy, specific brain regions do not mature at the same rate. Primary motor areas develop earlier than primary sensory areas, and the prefrontal cortex, which is located behind the forehead, is the least developed. As the prefrontal cortex matures, the child is increasingly able to regulate or control emotions, plan activities, strategize, and have better judgment. This maturation is not fully accomplished in infancy and toddlerhood but continues throughout childhood, adolescence, and even into adulthood.

During adolescence, some of the most developmentally significant changes in the brain occur in the **prefrontal cortex**,

which is involved in decision making and cognitive control, as well as other higher cognitive functions. During adolescence, **myelination** and **synaptic pruning** in the prefrontal cortex increases, improving the efficiency of information processing, and neural connections between the prefrontal cortex and other regions of the brain are strengthened. However, this growth takes time, and the growth is uneven.



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Video 6. *Lobes and Landmarks of the Brain Surface* identifies the lobes and some of the major cortexes of the brain.



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The Prefrontal Cortex

The prefrontal cortex, the part of the frontal lobes lying just behind the forehead, is often referred to as the "CEO of the brain," the cognitive control center. This brain region is responsible for

cognitive analysis, abstract thought, the moderation of "correct" behavior in social situations, the capacity to exercise good judgment, self-regulation and future orientation The prefrontal cortex takes in information from all of the senses and orchestrates thoughts and actions to achieve specific goals (Casey, Jones, & Hare, 2008; Walsh, 2004). Around 11 years of age, this region of the brain begins an extended process of pruning and myelination and is not complete until near the age of 25. This is one of the last regions of the brain to reach maturation. This delay may help to explain why some adolescents act the way they do. The so-called "executive functions" of the human prefrontal cortex include:

- Focusing attention
- Organizing thoughts and problem-solving
- Foreseeing and weighing possible consequences of behavior
- Considering the future and making predictions
- Forming strategies and planning
- Ability to balance short-term rewards with long term goals
- Shifting/adjusting behavior when situations change
- Impulse control and delaying gratification
- Modulation of intense emotions
- Inhibiting inappropriate behavior and initiating appropriate behavior
- Simultaneously considering multiple streams of information when faced with complex and challenging information

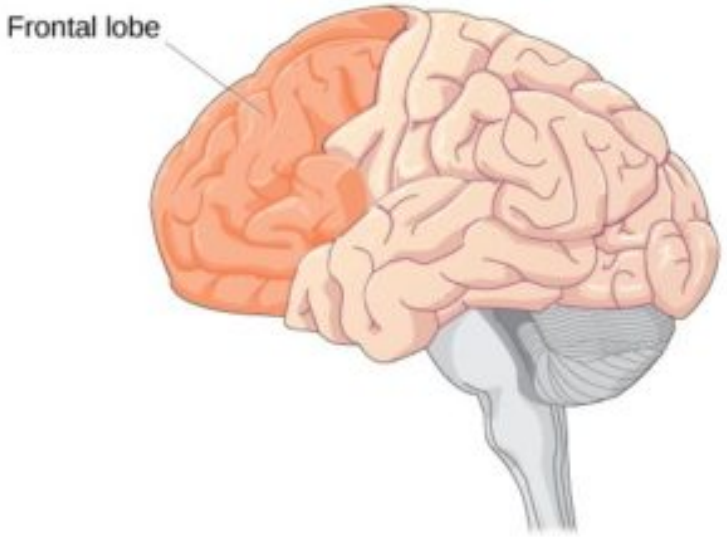


Figure 4. Brain development continues into the early 20s. The development of the frontal lobe, in particular, is important during this stage.

The difference in timing of the development of the limbic system and prefrontal cortex contributes to more risk-taking during adolescence because adolescents are motivated to seek thrills that sometimes come from risky behavior, such as reckless driving, smoking, or drinking, and have not yet developed the cognitive control to resist impulses or focus equally on the potential risks (Steinberg, 2008). One of the world's leading experts on adolescent development, Laurence Steinberg, likens this to engaging a powerful engine before the braking system is in place. The result is that adolescents are more prone to risky behaviors than are children or adults.

Lateralization

Lateralization is the process in which different functions become localized primarily on one side of the brain. For example, in most adults, the left hemisphere is more active than the right during language production, while the reverse pattern is observed during tasks involving visuospatial abilities (Springer & Deutsch, 1993). This process develops over time, however, structural asymmetries between the hemispheres have been reported even in fetuses (Chi, Dooling, & Gilles, 1997; Kasprian et al., 2011) and infants (Dubois et al., 2009).

Growth in the Hemispheres and Corpus Callosum

Between ages 3 and 6, the left hemisphere of the brain grows dramatically. This side of the brain or hemisphere is typically involved in language skills. The right hemisphere continues to grow throughout early childhood and is involved in tasks that require spatial skills, such as recognizing shapes and patterns. The Corpus Callosum, a dense band of fibers that connects the two hemispheres of the brain, contains approximately 200 million nerve fibers that connect the hemispheres (Kolb & Whishaw, 2011).

The corpus callosum is located a couple of inches below the longitudinal fissure, which runs the length of the brain and separates the two cerebral hemispheres (Garrett, 2015). Because the two hemispheres carry out different functions, they communicate with each other and integrate their activities through the corpus callosum. Additionally, because incoming information is directed toward one hemisphere, such as visual information from the left eye being directed to the right hemisphere, the corpus callosum shares this information with the other hemisphere.

The corpus callosum undergoes a growth spurt between ages 3 and 6, and this results in improved coordination between right and left hemisphere tasks. For example, in comparison to other individuals, children younger than 6 demonstrate difficulty coordinating an Etch A Sketch toy because their corpus callosum is not developed enough to integrate the movements of both hands (Kalat, 2016).

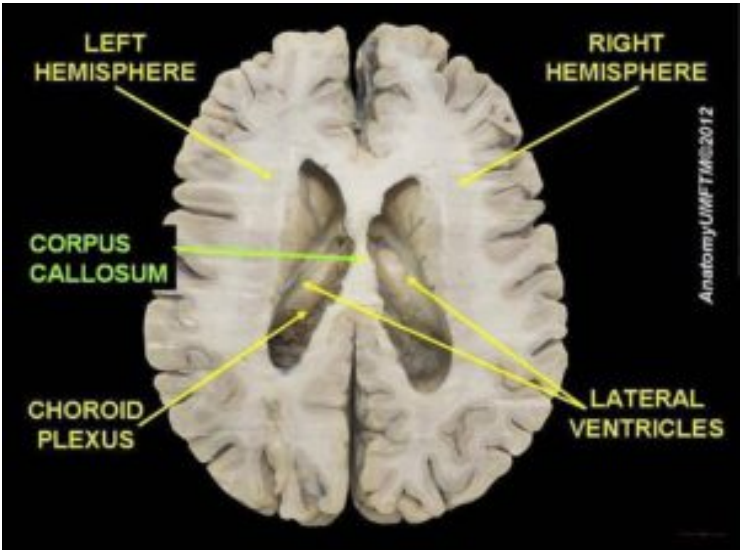


Figure 5. Corpus callosum.

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The Limbic System

The **limbic system** develops years ahead of the prefrontal cortex. Development in the limbic system plays an important role in determining rewards and punishments and processing emotional experience and social information. Pubertal hormones target the **amygdala** directly, and powerful sensations become compelling (Romeo, 2013). Brain scans confirm that cognitive control, revealed by fMRI studies, is not fully developed until adulthood because the prefrontal cortex is limited in connections and engagement (Hartley & Somerville, 2015). Recall that this area is responsible for judgment, impulse control, and planning, and it is still maturing into early adulthood (Casey, Tottenham, Liston, & Durston, 2005).

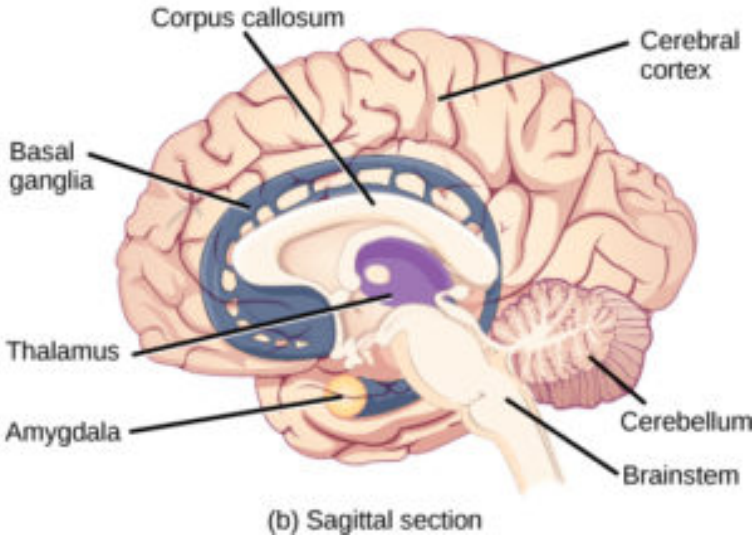


Figure 6. The limbic system.

Additionally, changes in both the levels of the neurotransmitters **dopamine** and **serotonin** in the limbic system make adolescents more emotional and more responsive to rewards

and stress. Dopamine is a neurotransmitter in the brain associated with pleasure and attuning to the environment during decision-making. During adolescence, dopamine levels in the limbic system increase, and the input of dopamine to the prefrontal cortex increases. The increased dopamine activity in adolescence may have implications for adolescent risk-taking and vulnerability to boredom. Serotonin is involved in the regulation of mood and behavior. It affects the brain in a different way. Known as the "calming chemical," serotonin eases tension and stress. Serotonin also puts a brake on the excitement and sometimes recklessness that dopamine can produce. If there is a defect in the serotonin processing in the brain, impulsive or violent behavior can result.

Brain Region Integration

MRI studies of the brain show that developmental processes tend to occur in the brain in a back-to-front pattern, explaining why the prefrontal cortex develops last. These studies have also found that teens have less white matter (myelin) in the frontal lobes of their brains when compared to adults, but this amount increases as the teen ages. With more myelin comes the growth of important brain connections, allowing for a better flow of information between brain regions. MRI research has also revealed that during adolescence, white matter increases in the corpus callosum, the bundle of nerve fibers connecting the right and left hemispheres of the brain. This allows for enhanced communication between the hemispheres and enables a full array of analytic and creative strategies to be brought to bear in responding to the complex dilemmas that may arise in a young person's life (Giedd, 2004).

In sum, the adolescent years are a time of intense brain changes. Interestingly, two of the primary brain functions develop at different rates. Brain research indicates that the part of the brain that perceives rewards from risk, the limbic system, kicks into high

gear in early adolescence. The part of the brain that controls impulses and engages in longer-term perspective, the frontal lobes, mature later. This may explain why teens in mid-adolescence take more risks than older teens. As the frontal lobes become more developed, two things happen. First, self-control develops as teens are better able to assess cause and effect. Second, more areas of the brain become involved in processing emotions, and teens become better at accurately interpreting others' emotions.



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Video 7. *Brain Changes during Adolescence* describes some of the physical changes that occur during adolescence.

The Teen Brain: 6 Things to Know from the National Institute of Mental Health

Your brain does not keep getting bigger as you get older

For girls, the brain reaches its largest physical size around 11 years old and for boys, the brain reaches its largest physical size around age 14. Of course, this difference in age does not mean either boys or girls are smarter than one another!

But that doesn't mean your brain is done maturing

For both boys and girls, although your brain may be as large as it will ever be, your brain doesn't finish developing and maturing until your mid- to late-20s. The front part of the brain, called the prefrontal cortex, is one of the last brain regions to mature. It is the area responsible for planning, prioritizing, and controlling impulses.

The teen brain is ready to learn and adapt

In a digital world that is constantly changing, the adolescent brain is well prepared to adapt to new technology—and is shaped in return by experience.

Many mental disorders appear during adolescence

All the big changes the brain is experiencing may explain why adolescence is the time when many mental disorders—such as schizophrenia, anxiety, depression, bipolar disorder, and eating disorders—emerge.

The teen brain is resilient

Although adolescence is a vulnerable time for the brain and for teenagers in general, most teens go on to become

healthy adults. Some changes in the brain during this important phase of development actually may help protect against long-term mental disorders.

Teens need more sleep than children and adults

Although it may seem like teens are lazy, science shows that melatonin levels (or the "sleep hormone" levels) in the blood naturally rise later at night and fall later in the morning than in most children and adults. This may explain why many teens stay up late and struggle with getting up in the morning. Teens should get about 9-10 hours of sleep a night, but most teens don't get enough sleep. A lack of sleep makes paying attention hard, increases impulsivity, and may also increase irritability and depression.



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Sensory and Motor Development

Sensory Development

As infants and children grow, their senses play a vital role in encouraging and stimulating the mind and in helping them observe their surroundings. Two terms are important to understand when learning about the senses. The first is **sensation**, or the interaction of information with the sensory receptors. The second is **perception**, or the process of interpreting what is sensed. It is possible for someone to sense something without perceiving it. Gradually, infants become more adept at perceiving with their senses, making them more aware of their environment and presenting more affordances or opportunities to interact with objects.

Vision

What can young infants see, hear, and smell? Newborn infants' sensory abilities are significant, but their senses are not yet fully developed. Many of a newborn's innate preferences facilitate interaction with caregivers and other humans. The womb is a dark environment void of visual stimulation. Consequently, vision is the most poorly developed sense at birth. Newborns typically cannot see further than 8 to 16 inches away from their faces, have difficulty keeping a moving object within their gaze, and can detect contrast more than color differences. If you have ever seen a newborn struggle to see, you can appreciate the cognitive efforts being made

to take in visual stimulation and build those neural pathways between the eye and the brain.

Although vision is their least developed sense, newborns already show a preference for faces. When you glance at a person, where do you look? Chances are you look into their eyes. If so, why? It is probably because there is more information there than in other parts of the face. Newborns do not scan objects this way; rather, they tend to look at the chin or another less detailed part of the face. However, by 2 or 3 months, they will seek more detail when visually exploring an object and begin showing preferences for unusual images over familiar ones, for patterns over solids, faces over patterns, and three-dimensional objects over flat images. Newborns have difficulty distinguishing between colors, but within a few months are able to discrimination between colors as well as adults. Infants can also sense depth as binocular vision develops at about 2 months of age. By 6 months, the infant can perceive depth perception in pictures as well (Sen, Yonas, & Knill, 2001). Infants who have experience crawling and exploring will pay greater attention to visual cues of depth and modify their actions accordingly (Berk, 2007).

Visual Pathways

Have you ever examined the drawings of young children? If you look closely, you can almost see the development of visual pathways reflected in the way these images change as pathways become more mature. Early scribbles and dots illustrate the use of simple motor skills. No real connection is made between an image being visualized and what is created on paper.

At age 3, the child begins to draw wispy creatures with heads and not much other detail. Gradually pictures begin to have more detail and incorporate more parts of the body. Arm buds become arms and faces take on noses, lips, and eventually eyelashes. Look for

drawings that you or your child has created to see this fascinating trend. Here are some examples of pictures drawn by girls from ages 2 to 7 years.



Figure 1. *These drawings demonstrate the progression in both drawing skill and visual processing during early childhood. The top left drawing is done by a 2-year old, and the bottom right image is drawn by a 7-year old.*

Hearing

The infant's sense of hearing is very keen at birth. If you remember from an earlier module, this ability to hear is evidenced as soon as the 5th month of prenatal development. In fact, an infant can

distinguish between very similar sounds as early as one month after birth and can distinguish between a familiar and non-familiar voice even earlier. Babies who are just a few days old prefer human voices, they will listen to voices longer than sounds that do not involve speech (Vouloumanos & Werker, 2004), and they seem to prefer their mother's voice over a stranger's voice (Mills & Melhuish, 1974). In an interesting experiment, 3-week-old babies were given pacifiers that played a recording of the infant's mother's voice and of a stranger's voice. When the infants heard their mother's voice, they sucked more strongly at the pacifier (Mills & Melhuish, 1974). Some of this ability will be lost by 7 or 8 months as a child becomes familiar with the sounds of a particular language and less sensitive to sounds that are part of an unfamiliar language.

Pain and Touch

Immediately after birth, a newborn is sensitive to touch and temperature, and is also sensitive to pain, responding with crying and cardiovascular responses. Newborns who are **circumcised** (the surgical removal of the foreskin of the penis) without anesthesia experience pain, as demonstrated by increased blood pressure, increased heart rate, decreased oxygen in the blood, and a surge of stress hormones (United States National Library of Medicine, 2016). According to the American Academy of Pediatrics (AAP), there are medical benefits and risks to circumcision. They do not recommend routine circumcision, however, they stated that because of the possible benefits (including prevention from urinary tract infections, penile cancer, and some STDs) parents should have the option to circumcise their sons if they want to (AAP, 2012).

The sense of touch is acute in infants and is essential to a baby's growth of physical abilities, language and cognitive skills, and socio-emotional competency. Touch not only impacts short-term development during infancy and early childhood but also has long-

term effects, suggesting the power of positive gentle touch from birth. Through touch, infants learn about their world, bond with their caregiver, and communicate their needs and wants. Research emphasizes the great benefits of touch for premature babies, but the presence of such contact has been shown to benefit all children (Stack, 2010). In an extreme example, some children in Romania were reared in orphanages in which a single care worker may have had as many as 10 infants to care for at one time. These infants were not often helped or given toys with which to play. As a result, many of them were developmentally delayed (Nelson, Fox, & Zeanah, 2014). When we discuss emotional and social development later in this module, you will also see the important role that touch plays in helping infants feel safe and protected, which builds trust and secure attachments between the child and their caregiver.

Taste and Smell

Not only are infants sensitive to touch, but newborns can also distinguish between sour, bitter, sweet, and salty flavors and show a preference for sweet flavors. They can distinguish between their mother's scent and that of others, and prefer the smell of their mothers. A newborn placed on the mother's chest will inch up to the mother's breast, as it is a potent source of the maternal odor. Even on the first day of life, infants orient to their mother's odor and are soothed, when crying, by their mother's odor (Sullivan et al., 2011).



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Motor Development

From Reflexes to Voluntary Movements

Every basic **motor skill** (any movement ability) develops over the first two years of life. The sequence of motor skills first begins with **reflexes**. Infants are equipped with a number of reflexes, or involuntary movements in response to stimulation, and some are necessary for survival. These include the breathing reflex, or the need to maintain an oxygen supply (this includes hiccups, sneezing, and thrashing reflexes), reflexes that maintain body temperature (crying, shivering, tucking the legs close, and pushing away blankets), the sucking reflex, or automatically sucking on objects that touch their lips, and the rooting reflex, which involves turning toward any object that touches the cheek (which manages feeding, including the search for a nipple). Other reflexes are not necessary for survival, but signify the state of brain and body functions. Some of these include: the babinski reflex (toes fan upward when feet are stroked), the stepping reflex (babies move their legs as if to walk when feet touch a flat surface), the palmar grasp (the infant will tightly grasp any object placed in its palm), and the moro reflex (babies will fling arms out and then bring to chest if they hear a loud noise). These movements occur automatically and are signals that the infant is functioning well neurologically. Within the first several

weeks of life, these reflexes are replaced with voluntary movements or motor skills.



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Video 1. *Neonatal Reflexes* reviews many of the primitive and survival reflexes present at birth.

Watch It

Video 2. Watch this video to see examples of newborn reflexes.



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Major Motor Milestones

Motor development occurs in an orderly sequence as infants move from reflexive reactions (e.g., sucking and rooting) to more advanced motor functioning. This development proceeds in a **cephalocaudal** (from head-down) and **proximodistal** (from center-out) direction. For instance, babies first learn to hold their heads up, then sit with assistance, then sit unassisted, followed later by crawling, pulling up, cruising, and then walking. As motor skills develop, there are certain developmental milestones that young children should achieve. For each milestone, there is an average age, as well as a range of ages in which the milestone should be reached. An example of a developmental milestone is a baby holding up its head. Babies on average are able to hold up their heads at 6 weeks old, and 90% of babies achieve this between 3 weeks and 4 months old. If a baby is not holding up his head by 4 months old, he is showing a delay. On average, most babies sit alone at 7 months old. Sitting involves both coordination and muscle strength, and 90% of babies achieve this milestone between 5 and 9 months old (CDC, 2018). If the child is displaying delays on several milestones, that is a reason for concern, and the parent or caregiver should discuss this with the child's pediatrician. Some developmental delays can be identified and addressed through early intervention.



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Video 3. *Major Motor Milestones* identifies some of the major motor developments in the first few years of life.

Link to Learning

For more information on developmental milestones, please see the CDC's Developmental Milestones.

Gross Motor Skills

Gross motor skills are voluntary movements that involve the use of large muscle groups and are typically large movements of the arms, legs, head, and torso. These skills begin to develop first. Examples include moving to bring the chin up when lying on the stomach, moving the chest up, rocking back and forth on hands and knees. But it also includes exploring an object with one's feet as many babies do, as early as 8 weeks of age, if seated in a carrier or other device that frees the hips. This may be easier than reaching for an object with the hands, which requires much more practice (Berk, 2007). And sometimes an infant will try to move toward an object while crawling and surprisingly move backward because of the greater amount of strength in the arms than in the legs!



Figure 2. *This baby is working on his pincer grasp.*

Fine Motor Skills

Fine motor skills are more exact movements of the hands and fingers and include the ability to reach and grasp an object. These skills focus on the muscles in the fingers, toes, and eyes, and enable coordination of small actions (e.g., grasping a toy, writing with a pencil, and using a spoon). Newborns cannot grasp objects voluntarily but do wave their arms toward objects of interest. At about 4 months of age, the infant is able to reach for an object, first with both arms and within a few weeks, with only one arm. Grasping an object involves the use of the fingers and palm, but no thumbs. Stop reading for a moment and try to grasp an object using the fingers and the palm. How does that feel? How much control do you have over the object? If it is a pen or pencil, are you able to write with it? Can you draw a picture? The answer is, probably not. Use of the thumb comes at about 9 months of age when the infant is able to grasp an object using the forefinger and thumb (**the pincer grasp**). This ability greatly enhances the ability to control and manipulate an object, and infants take great delight in this newfound ability. They may spend hours picking up small objects from the floor and placing them in containers. By 9 months, an infant can also watch a moving object, reach for it as it approaches, and grab it. This is quite a complicated set of actions if we remember how difficult this would have been just a few months earlier.

Table 1. Timeline of Developmental Milestones.

~2 months	• Can hold head upright on own • Smiles at sound of familiar voices and follows movement with eyes
~3 months	• Can raise head and chest from prone position • Smiles at others • Grasps objects • Rolls from side to back
~4–5 months	• Babbles, laughs, and tries to imitate sounds • Begins to roll from back to side
~6 months	• Moves objects from hand to hand

~7-8 months	• Can sit without support • May begin to crawl • Responds to own name • Finds partially hidden objects
~8-9 months	• Walks while holding on • Babbles “mama” and “dada” • Claps
~11-12 months	• Stands alone • Begins to walk • Says at least one word • Can stack two blocks
~18 months	• Walks independently • Drinks from a cup • Says at least 15 words • Points to body parts
~2 years	• Runs and jumps • Uses two-word sentences • Follows simple instructions • Begins make-believe play
~3 years	• Speaks in multi-word sentences • Sorts objects by shape and color

~4 years	• Draws circles and squares • Rides a tricycle • Gets along with people outside of the family • Gets dressed
~5 years	• Can jump, hop, and skip • Knows name and address • Counts ten or more objects

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Motor Skill Development

Remember that **gross motor skills** are voluntary movements involving the use of large muscle groups while **fine motor skills** are more exact movements of the hands and fingers and include the ability to reach and grasp an object. Early childhood is a time of development of both gross and fine motor skills.

Early childhood is a time when children are especially attracted to motion and song. Days are filled with moving, jumping, running, swinging and clapping, and every place becomes a playground. Even the booth at a restaurant affords the opportunity to slide around in the seat or disappear underneath and imagine being a sea creature in a cave! Of course, this can be frustrating to a caregiver, but it's the business of early childhood. Children may frequently ask their caregivers to "look at me" while they hop or roll down a hill. Children's songs are often accompanied by arm and leg movements or cues to turn around or move from left to right. Running, jumping, dancing movements, etc. all afford children the ability to improve their gross motor skills.

Fine motor skills are also being refined in activities such as pouring water into a container, drawing, coloring, and using scissors. Some children's songs promote fine motor skills as well (have you ever heard of the song "itsy, bitsy, spider"?). Mastering the fine art of cutting one's own fingernails or tying their shoes will take a lot of practice and maturation. Fine motor skills continue to develop in middle childhood, but for preschoolers, the type of play that deliberately involves these skills is emphasized.

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Video 4. *Early Childhood Gross Motor Development* identifies some of the major gross motor developments in early childhood.

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Link to Learning

The Centers for Disease Control and Prevention (CDC) describes the developmental milestones for children from 2 months through 5 years old. After reviewing the information, take the CDC's Developmental Milestones quiz to see how well you recall what you've learned. If you are a parent with concerns about your child's development, contact your pediatrician.

Sleep

Sleep is a period of rest that alternates with wakefulness. You have internal body clocks that control when you are awake and when your body is ready for sleep. These clocks have cycles of approximately 24 hours. The clocks are regulated by multiple factors, including light, darkness, and sleep schedules. Once asleep, you cycle through the stages of sleep throughout the night in a predictable pattern. These sleep patterns change with age.

Along with food and water, sleep is one of the human body's most important physiological needs—we cannot live without it. Extended sleeplessness (i.e., lack of sleep for longer than a few days) has severe psychological and physical effects. Research on rats has found that a week of no sleep leads to loss of immune function, and two weeks of no sleep leads to death. Recently, neuroscientists have learned that at least one vital function of sleep is related to learning and memory. New findings suggest that sleep plays a critical role in flagging and storing important memories, both intellectual and physical, and perhaps in making subtle connections that were invisible during waking hours.

Many factors play a role in preparing your body to fall asleep and wake up. Your body has several internal clocks, called circadian clocks. These typically follow a 24-hour repeating rhythm, called the circadian rhythm. This rhythm affects every cell, tissue, and organ in your body and how they work. Your central circadian clock, located in your brain, tells you when it is time for sleep. Other circadian clocks are located in organs throughout your body. Your body's internal clocks are in sync with certain cues in the environment. Light, darkness, and other cues help determine when you feel awake and when you feel drowsy. Artificial light and caffeine can disrupt this process by giving your body false wakefulness cues.

Your body has a biological need for sleep that increases when you have been awake for a long time. This is controlled by homeostasis,

the process by which your body keeps your systems, such as your internal body temperature, steady. A compound called adenosine is linked to this need for sleep. While you are awake, the level of adenosine in your brain continues to rise. The rising levels signal a shift toward sleep. Caffeine and certain drugs can interrupt this process by blocking adenosine.

If you follow a natural schedule of days and nights, light signals received through your eyes tell your brain that it is daytime. The area of your brain that receives these signals, called the suprachiasmatic nucleus, transmits the signals to the rest of your body through the sympathetic system and the parasympathetic system. This helps your central body clock stay in tune with the day and night. Exposure to bright artificial light in the late evening can disrupt this process and prevent your brain from releasing melatonin. This can make it harder to fall asleep. Examples of bright artificial light include the light from a TV screen, a smartphone, or a very bright alarm clock.

The light–dark cycle influences when your brain makes and releases a hormone called melatonin. Melatonin travels to the cells in your body through your bloodstream. The amount of melatonin in your bloodstream starts to increase in the evening and peaks in the early morning. Melatonin is thought to promote sleep. As you are exposed to more light, such as the sun rising, your body releases another hormone called cortisol. Cortisol naturally prepares your body to wake up.

When you sleep, you cycle through two phases of sleep: rapid eye movement (REM) and non-REM sleep. The cycle starts over every 80 to 100 minutes. Usually, there are four to six cycles per night. You may wake up briefly between cycles. Sleep studies use sensors to record eye movements and brain activity, which are used to classify sleep phases and stages.

During REM sleep, your eyes twitch and your brain is active. Brain activity measured during REM sleep is similar to your brain's activity during waking hours. Dreaming usually happens during REM sleep. Your muscles normally become limp to prevent you from acting out

your dreams. You usually have more REM sleep later in the night, but you do not have as much REM sleep in colder temperatures. This is because, during REM sleep, your body does not regulate its temperature properly.

The patterns and types of sleep change as people mature. For example, newborns spend more time in REM sleep. The amount of slow-wave sleep peaks in early childhood and then drops sharply in the teenage years. Slow-wave sleep continues to decrease through adulthood, and older people may not have any slow-wave sleep at all.

The amount of sleep an individual needs varies depending on multiple factors including age, physical condition, psychological condition, and energy exertion. Just like any other human characteristic, the amount of sleep people need to function best differs among individuals, even those of the same age and gender.

Though there is no magic sleep number, there are general rules for how much sleep certain age groups need. For instance, children need more sleep per day in order to develop and function properly: up to 18 hours for newborn babies, with a declining rate as a child ages. A newborn baby spends almost 9 hours a day in REM sleep. By the age of five, only slightly over two hours is spent in REM. Studies show that young children need about 10 to 11 hours of sleep, adolescents need between 8.5 and 9.25, and adults generally need between 7 and 9 hours.

Table 1. Typical amount of sleep by age



Infant Sleep

Infants 0 to 2 years of age sleep an average of 12.8 hours a day, although this changes and develops gradually throughout an infant's life. For the first three months, newborns sleep between 14 and 17 hours a day, then they become increasingly alert for longer periods of time. About one-half of an infant's sleep is rapid eye movement (REM) sleep, and infants often begin their sleep cycle with REM rather than non-REM sleep. They also move through the sleep cycle more quickly than adults. Parents spend a significant amount of time worrying about and losing even more sleep over their infant's sleep schedule when there remains a great deal of variation in sleep patterns and habits for individual children. A 2018 study showed that at 6 months of age, 62% of infants slept at least six hours during the night, 43% of infants slept at least 8 hours through the

night, and 38% of infants were *not* sleeping at least six continual hours through the night. At 12 months, 28% of children were still not sleeping at least 6 uninterrupted hours through the night, while 78% were sleeping at least 6 hours, and 56% were sleeping at least 8 hours.

The most common infant sleep-related problem reported by parents is nighttime waking. Studies of new parents and sleep patterns show that parents lose the most sleep during the first three months with a new baby, with mothers losing about an hour of sleep each night, and fathers losing a disproportionate 13 minutes. This decline in sleep quality and quantity for adults persists until the child is about six years old.

While this shows there is no precise science as to when and how an infant will sleep, there are general trends in sleep patterns. Around six months, babies typically sleep between 14-15 hours a day, with 3-4 of those hours happening during daytime naps. As they get older, these naps decrease from several to typically two naps a day between ages 9-18 months. Often, periods of rapid weight gain or changes in developmental abilities such as crawling or walking will cause changes to sleep habits as well. Infants generally move towards one 2-4 hour nap a day by around 18 months, and many children will continue to nap until around four or five years old.

Sudden Unexpected Infant Deaths (SUID)

Each year in the United States, there are about 3,500 Sudden Unexpected Infant Deaths (SUID). These deaths occur among infants less than one-year-old and have no immediately obvious cause (CDC, 2015). The three commonly reported types of SUID are:

- **Sudden Infant Death Syndrome (SIDS):** SIDS is identified when the death of a healthy infant occurs suddenly and unexpectedly, and medical and forensic investigation findings

(including an autopsy) are inconclusive. SIDS is the leading cause of death in infants up to 12 months old, and approximately 1,500 infants died of SIDS in 2013 (CDC, 2015). The risk of SIDS is highest at 4 to 6 weeks of age. Because SIDS is diagnosed when no other cause of death can be determined, possible causes of SIDS are regularly researched. One leading hypothesis suggests that infants who die from SIDS have abnormalities in the area of the brainstem responsible for regulating breathing (Weekes-Shackelford & Shackelford, 2005). Although the exact cause is unknown, doctors have identified the following risk factors for SIDS:

    - low birth weight
    - siblings who have had SIDS
    - sleep apnea
    - of African-American or Eskimo decent
    - low socioeconomic status (SES)
    - smoking in the home
- **Unknown Cause:** The sudden death of an infant less than one year of age that cannot be explained because a thorough investigation was not conducted and the cause of death could not be determined.
- **Accidental Suffocation and Strangulation in Bed:** Reasons for accidental suffocation include the following: Suffocation by soft bedding, another person rolling on top of or against the infant while sleeping, an infant being wedged between two objects such as a mattress and wall, and strangulation such as when an infant's head and neck become caught between crib railings.

The combined SUID rate declined considerably following the release of the American Academy of Pediatrics safe sleep recommendations in 1992, which advocated that infants be placed on their backs for sleep (non-prone position). These recommendations were followed by a major Back to Sleep Campaign in 1994. According to the CDC, the SIDS death rate is now less than one-fourth of what is was

(130 per 100,000 live birth in 1990 versus 40 in 2015). However, accidental suffocation and strangulation in bed mortality rates remained unchanged until the late 1990s. Some parents were still putting newborns to sleep on their stomachs partly because of past tradition. Most SIDS victims experience several risks, an interaction of biological and social circumstances. But thanks to research, the major risk, stomach sleeping, has been highly publicized. Other causes of death during infancy include congenital birth defects and homicide.

Co-Sleeping

The location of sleep depends primarily on the baby's age and culture. **Bed-sharing** (in the parents' bed) or **co-sleeping** (in the parents' room) is the norm is some cultures, but not in others (Esposito et al. 2015). Colvin, Collie-Akers, Schunn, and Moon (2014) analyzed a total of 8,207 deaths from 24 states during 2004–2012. The deaths were documented in the National Center for the Review and Prevention of Child Deaths Case Reporting System, a database of death reports from state child death review teams. The results indicated that younger victims (0-3 months) were more likely to die by bed-sharing and sleeping in an adult's bed or on a person. A higher percentage of older victims (4 months to 364 days) rolled into objects in the sleep environment and changed position from side/back to prone. Carpenter et al. (2013) compared infants who died of SIDS with a matched control and found that infants younger than three months old who slept in bed with a parent were five times more likely to die of SIDS compared to babies who slept separately from the parents, but were still in the same room. They concluded that bed-sharing, even when the parents do not smoke or take alcohol or drugs, increases the risk of SIDS. However, when combined with parental smoking and maternal alcohol consumption

and/or drug use, the risks associated with bed-sharing greatly increased.

Despite the risks noted above, the controversy about where babies should sleep has been ongoing. Co-sleeping has been recommended for those who advocate attachment parenting (Sears & Sears, 2001), and other research suggests that bed-sharing and co-sleeping is becoming more popular in the United States (Colson et al., 2013). So, what are the latest recommendations?

The American Academy of Pediatrics (AAP) actually updated their recommendations for a Safe Infant Sleeping Environment in 2016. The most recent AAP recommendations on creating a safe sleep environment include:

- Back to sleep for every sleep. Always place the baby on his or her back on a firm sleep surface such as a crib or bassinet with a tight-fitting sheet.
- Avoid the use of soft bedding, including crib bumpers, blankets, pillows, and soft toys. The crib should be bare.
- Breastfeeding is recommended.
- Share a bedroom with parents, but not the same sleeping surface, preferably until the baby turns 1 but at least for the first six months. Room-sharing decreases the risk of SIDS by as much as 50 percent.
- Avoid baby's exposure to smoke, alcohol, and illicit drugs.

As you can see, there is a recommendation to now "share a bedroom with parents," but not the same sleeping surface. Breastfeeding is also recommended as adding protection against SIDS, but after feeding, the AAP encourages parents to move the baby to his or her separate sleeping space, preferably a crib or bassinet in the parents' bedroom. Finally, the report included new evidence that supports skin-to-skin care for newborn infants.

Link to Learning

The website **Zero to Three** has more information on infant sleep patterns and habits. Feel free to explore their multiple topics on the subject.



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Sleep in Childhood

The American Academy of Sleep Medicine (2021) has recommended that toddlers get 11 to 14 hours of sleep in a 24 hour period. This may include naps throughout the day. Preschool children will naturally need fewer naps and will typically forgo naps by elementary school. This age group should sleep 10 to 13 hours per day. Children aged 6–12 years should regularly sleep 9 to 12 hours per 24 hours.

Children who do not get enough sleep have a higher risk of obesity, diabetes, injuries, poor mental health, and problems with attention and behavior. Children who get the recommended hours of sleep on a regular basis tend to experience improved attention, behavior, learning, memory, emotional regulation, quality of life, and

mental and physical health (American Academy of Sleep Medicine, 2021).

Bedtime Calculator

The American Academy of Sleep Medicine provides a bedtime calculator to help parents determine bedtimes for their children based on age and waketime.

Sleep Hygiene

Good sleep habits (sometimes referred to as "sleep hygiene") can help you get a good night's sleep. This means having both a bedroom environment and daily routines that promote consistent, uninterrupted sleep.

Some habits that can improve sleep health:

- Be consistent. Go to bed at the same time each night and get up at the same time each morning, including on the weekends.
- Bedtime routines can signal to the body and brain that it is time to sleep. For children, this might include a bath, story, or songs before going to bed. Additionally, limit children's time spent awake in bed doing non-sleep activities to avoid associating bed with play.
- Make sure the bedroom is quiet, dark, relaxing, and at a comfortable temperature, and avoid allowing children to fall asleep somewhere other than their bed.
- Remove electronic devices, such as TVs, computers, and smartphones, from the bedroom and avoid artificial light for an hour before bed.

- Avoid large meals, liquids two hours before, and caffeine eight hours before bedtime.
- Get some exercise. Being physically active during the day can help you fall asleep more easily at night.

Sleep Disturbances

Sometimes children have difficulty falling or staying asleep. Changes in routine, excitement, biological changes, health issues, or sleep disorders can be the culprit.

Here are a few suggestions to help children that are having sleep difficulties:

- Use relaxation techniques, such as deep breathing or imagining positive scenes, to help your child relax before bed.
- For children who worry a lot at bedtime, try scheduling a "worry time" earlier in the day and encourage them to talk about their worries with a parent.
- Security objects, such as a blanket or stuffed toy, can help children feel safe and secure at bedtime.
- If your child wakes up and has trouble falling back asleep, it is better for them to get out of bed. Do a quiet activity, such as reading, for 20-30 minutes. Then have them return to bed.

Sleepwalking (Somnambulism)

Sleepwalking (sometimes called sleepwalking disorder, **somnambulism**, or noctambulation) causes a person to get up and walk during the early hours of sleep. The person may sit up and look awake (though they're actually asleep), get up and walk around, move items, or dress or undress themselves. They will have a blank stare and still be able to perform complex tasks.

Some individuals also talk while in their sleep, saying meaningless words and even having arguments with people who are not there. A person who sleepwalks will be confused upon waking up and may also experience anxiety and fatigue. Sleepwalking can be dangerous—people have been known to seriously hurt themselves during sleepwalking episodes. It is most common in children, but it also occurs occasionally in adults.

Sleepwalkers can be difficult to awaken. They may be startled by waking them and usually have no memory of the sleepwalking event. Often, the best way to manage a sleepwalking episode is to get them back to bed by gently guiding them back to their room and into bed If they resist, stay with them and help them avoid dangerous objects and situations. If you must awaken them, do so with loud noises rather than by shaking or touching them roughly. The best prevention of sleepwalking is good sleep hygiene.

Sleep Terrors and Nightmare Disorder

Sleep terrors are characterized by a sudden arousal from deep sleep with a scream or cry, accompanied by some behavioral manifestations of intense fear. Sleep terrors typically occur in the first few hours of sleep, during stage 3 NREM sleep. Night terrors tend to happen during periods of arousal from delta sleep (i.e., slow-wave sleep). They are worse than nightmares, causing significant disorientation, panic, and anxiety. They can last up to 10 minutes, and the person may be screaming and difficult to wake. Sleep terrors are most common in young children but may continue into adulthood.

Like sleepwalking, waking someone that is having night terrors can be difficult and the person will likely be disorientated and confused. The best way to handle a night terror is to wait it out patiently and make sure the person doesn't get hurt if thrashing around. Kids usually will settle down and return to sleep on their own in a few minutes.

Sleep in Adolescence

Adolescents' normal sleep patterns are different from those of children and adults. Teens are often drowsy upon waking, tired during the day, and wakeful at night. Although it may seem like teens are lazy, science shows that **melatonin** levels (or the "sleep hormone" levels) in the blood naturally rise later at night and fall later in the morning in teens than in most children and adults. This may explain why many teens stay up late and struggle with getting up in the morning.

According to the National Sleep Foundation (NSF) (2016), adolescents need about 8 to 10 hours of sleep each night to function best. The most recent Sleep in America poll in 2006 indicated that adolescents between sixth and twelfth grade were not getting the recommended amount of sleep. On average, adolescents only received 7 ½ hours of sleep per night on school nights with younger adolescents getting more than older ones (8.4 hours for sixth graders and only 6.9 hours for those in twelfth grade). For older adolescents, only about one in ten (9%) get an optimal amount of sleep, and they are more likely to experience negative consequences the following day. These include feeling too tired or sleepy, being cranky or irritable, falling asleep in school, having a depressed mood, and drinking caffeinated beverages (NSF, 2016). Additionally, they are at risk for substance abuse, car crashes, poor academic performance, obesity, and a weakened immune system (Weintraub, 2016).

Why don't adolescents get adequate sleep? In addition to known environmental and social factors, including work, homework, media, technology, and socializing, the adolescent brain is also a factor. As adolescents go through puberty, their circadian rhythms change and push back their sleep time until later in the evening (Weintraub, 2016). This biological change not only keeps adolescents awake at night, but it also makes it difficult for them to get up in the morning. When they are awake too early, their brains do not function

optimally. Impairments are noted in attention, behavior, and academic achievement, while increases in tardiness and absenteeism are also demonstrated.

To support adolescents' later sleeping schedule, the Centers for Disease Control and Prevention recommended that school not begin any earlier than 8:30 a.m. Unfortunately, over 80% of American schools begin their day earlier than 8:30 a.m. with an average start time of 8:03 a.m. (Weintraub, 2016). Psychologists and other professionals have been advocating for later school times, and they have produced research demonstrating better student outcomes for later start times. More middle and high schools have changed their start times to reflect the sleep research better. However, the logistics of changing start times and bus schedules are proving too difficult for some schools leaving many adolescents vulnerable to the negative consequences of sleep deprivation.

Links to Learning

Video 1. *Why Schools Should Start Later for Teens* discusses how early school start times impact teens and how later start times can benefit students. As research reveals the importance of sleep for teenagers, many people advocate for later high school start times. Read about some of the **research at the National Sleep Foundation on school start times**.



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Behavioral and Psychological Adjustment

With all of these brain changes and novel experiences, we expect to see children and adolescents undergo significant behavioral and psychological adjustments. Adolescents, especially, are facing strong emotions, changing peer relationships, more independence, expectations to be more adult-like, and a desire to take risks, all while lacking a fully mature brain or the life experience to navigate these situations. It is inevitable that some mistakes will occur along the way, as well as a great deal of learning. We will examine some typical adjustment issues encountered by children and adolescents: aggression, risk-taking, drug use, anxiety, depression, and self-violence.

Aggression and Antisocial Behavior



Several major theories of the development of antisocial behavior treat childhood and adolescence as important periods. Patterson's (1982) '*early versus late starter model*' of the development of aggressive and antisocial behavior distinguishes youths whose antisocial behavior begins during childhood (early starters) versus adolescence (late starters). According to the theory, early starters are at greater risk for long-term antisocial behavior

that extends into adulthood than are late starters. Late starters who become antisocial during adolescence are theorized to experience poor parental monitoring and supervision, aspects of parenting that become more salient during adolescence. Poor monitoring and lack of supervision contribute to increasing involvement with deviant peers, which, in turn, promotes adolescents' own antisocial behavior. Late starters desist from antisocial behavior when changes in the environment make other options more appealing.

Similarly, Moffitt's (1993) '*life-course-persistent versus adolescent-limited model*' distinguishes between antisocial behavior that begins in childhood versus adolescence. Moffitt regards adolescent-limited antisocial behavior as resulting from a "maturity gap" between adolescents' dependence on and control by adults and their desire to demonstrate their freedom from adult constraint. However, as they continue to develop, and legitimate adult roles and privileges become available to them, there are fewer incentives to engage in antisocial behavior, leading to discontinuation of these antisocial behaviors.

Psychology and Mass Shootings

Virginia Tech, Columbine, Stoneman Douglas High School, Santa Fe High School, Sandy Hook, Aurora, Las Vegas, Orlando—all sites of horrific and tragic mass shootings. Why are they so common? And what led the perpetrators to commit these acts of violence? Several possible factors may work together to create a fertile environment for mass murder in the United States. Most commonly suggested include:

- Higher accessibility and ownership of guns. The U.S. has the highest per-capita gun ownership in the

world with 120.5 firearms per 100 people; the second highest is Yemen with 52.8 firearms per 100 people

- Mental illness and its treatment (or the lack thereof) with psychiatric drugs. This is controversial. Many of the mass shooters in the U.S. suffered from mental illness, but the estimated number of mental illness cases has not increased as significantly as the number of mass shootings. Under 5% of violent behaviors in the U.S. are committed by persons with mental health diagnoses. A 2002 report by the U.S. Secret Service and U.S. Department of Education found evidence that a majority of school shooters displayed evidence of mental health symptoms, often undiagnosed or untreated. Criminologists Fox and DeLateur note that mental illness is only part of the issue, however, and mass shooters tend to externalize their problems, blaming others, and are unlikely to seek psychiatric help, even if available. Other scholars have concluded that mass murderers display a common constellation of chronic mental health symptoms, chronic anger or antisocial traits, and a tendency to blame others for problems. However, they note that attempting to "profile" school shooters with such a constellation of traits will likely result in many false positives as many individuals with such a profile do not engage in violent behaviors.
- The desire to seek revenge for a long history of being bullied at school. In recent years, citizens calling themselves "targeted individuals" have cited adult bullying campaigns as a reason for their deadly violence.

- The widespread chronic gap between people's expectations for themselves and their actual achievement, and individualistic culture.
- The desire for fame and notoriety. Also, mass shooters learn from one another through "media contagion," that is, "the mass media coverage of them and the proliferation of social media sites that tend to glorify the shooters and downplay the victims."
- The copycat phenomenon.
- Failure of government background checks due to incomplete databases and/or staff shortages.

For additional Information: Mass Violence in America, by The National Council for Behavioral Health

Behavior and Conduct Problems

Children and adolescents sometimes argue, are aggressive, or act angry or defiant around adults. A behavior disorder may be diagnosed when these disruptive behaviors are uncommon for the child's age at the time, persist over time, or are severe. Because disruptive behavior disorders involve acting out and showing unwanted behavior towards others they are often called **externalizing disorders**.

Oppositional Defiant Disorder



When children act out persistently so that it causes serious problems at home, in school, or with peers, they may be diagnosed with Oppositional Defiant Disorder (ODD). ODD usually starts before 8 years of age, but no later than by about 12 years of age. Children with ODD are more likely to act oppositional or defiant around people they know well, such as family members, a regular care provider, or a teacher. Children with ODD show these behaviors more often than other children their age.

Examples of ODD behaviors include

- Often being angry or losing one's temper
- Often arguing with adults or refusing to comply with adults' rules or requests
- Often resentful or spiteful
- Deliberately annoying others or becoming annoyed with others
- Often blaming other people for one's own mistakes or misbehavior

Conduct Disorder

Conduct Disorder (CD) is diagnosed when children show an ongoing pattern of aggression toward others, and serious violations of rules and social norms at home, in school, and with peers. These rule violations may involve breaking the law and result in arrest. Children with CD are more likely to get injured and may have difficulties getting along with peers.

Examples of CD behaviors include

- Breaking serious rules, such as running away, staying out at night when told not to, or skipping school
- Being aggressive in a way that causes harm, such as bullying, fighting, or being cruel to animals
- Lying, stealing, or damaging other people's property on purpose

Diagnosing Behavior Disorders

Learn about the guidelines for diagnosing and treating ODD and CD

Treatment for Disruptive Behavior Disorders

Starting treatment early is important. Treatment is most effective if it fits the needs of the specific child and family. The first step to treatment is to talk with a healthcare provider. A comprehensive evaluation by a mental health professional may be needed to get the right diagnosis. Some of the signs of behavior problems, such as not following rules in school, could be related to learning problems that may need additional intervention. For younger children, the treatment with the strongest evidence is behavior therapy training for parents, where a therapist helps the parent learn effective ways to strengthen the parent-child relationship and respond to the child's behavior. For school-age children and teens, an often-used effective treatment is a combination of training and therapy that includes the child, the family, and the school.

Managing Symptoms: Staying Healthy

Being healthy is important for all children and can be especially important for children with behavior or conduct problems. In addition to behavioral therapy and medication, practicing certain healthy lifestyle behaviors may reduce challenging and disruptive behaviors your child might experience. Here are some healthy behaviors that may help:

- Engaging in regular physical activity, including aerobic and vigorous exercise
- Eating a healthful diet centered on fruits, vegetables, whole grains, legumes (for example, beans, peas, and lentils), lean protein sources, and nuts and seeds
- Getting the recommended amount of sleep each night based on age
- Strengthening relationships with family members

Prevention of Disruptive Behavior Disorders

It is not known exactly why some children develop disruptive behavior disorders. Many factors may play a role, including biological and social factors. It is known that children are at greater risk when they are exposed to other types of violence and criminal behavior, when they experience maltreatment or harsh or inconsistent parenting, or when their parents have mental health conditions like substance use disorders, depression, or attention-deficit/hyperactivity disorder (ADHD). The quality of early childhood care also can impact whether a child develops behavior problems.

Although these factors appear to increase the risk for disruptive behavior disorders, there are ways to decrease the chance that

children experience them. Learn about public health approaches to prevent these risks:

- Positive parenting strategies for young children
- Child maltreatment prevention
- Youth violence prevention
- Bullying prevention
- Mental health in adults
- Finding high-quality child care

Risk-Taking Behavior

Neuroscience has found that there is early maturation of the limbic system and a prolonged maturation of the prefrontal cortex region of the brain. The maturation of these areas is associated with increased self-control, while the absence of maturation is associated with impulsivity and poor decision-making (Romer, 2012). Adolesces is often associated with greater risk-taking behavior and impulsivity, as demonstrated by increased experimentation with drug use, accidents, and risky sexual behavior (Arnett, 1992).

The propensity for risking-taking behavior is likely influenced by several factors. There are changes happening in parts of the brain that may increase teens' tendencies toward risky behaviors. There is limited maturation in parts of the brain that may control risky decisions and behavior. Moreover, experiences may increase or decrease the proclivity for risky behavior.

Sensation-Seeking

All areas of the brain are not maturing at the same time and rate.

Some parts of the brain develop earlier, while others are not fully mature until adulthood. An area of the brain referred to as the 'rewards system' begins to develop rather early in adolescence. The rewards system is stimulated with increased releases of dopamine when engaged in sensation-seeking behavior. This change encourages adolescence to desire independence, seek novel experiences, and engage in more adult-like activities (Spear, 2007). Many of these exciting, novel, independent activities are associated with some risk (e.g., drugs, driving, sex). Increases in sensation-seeking behavior are observed in 14 to 22-year-olds. The level of sensation-seeking is typically greater in males than females and continues further into adulthood for males. Sensation-seeking behavior tends to peak in females around 16, whereas males peak around 19 (Romer, 2012).

The decision-making process involved in sensation-seeking may be the same heuristic that influences adult decisions. Heuristics are simple decision rules that allow us to make decisions quickly, without much contemplation. In this case, the affect heuristic seems to apply in many risky decisions. The affect heuristic relies on our dominant affective (emotional) reaction to a situation when evaluating the risks and rewards. Simply, we tend to conclude that the more positive effect that is associated with a situation, the less risk we attach. The rational choice would expect us to evaluate risk and reward separately, not in relation to one another. Enjoying an activity does not inherently make it less risky, and safe activity is not innately less enjoyable (Romer, 2012).

Peers are another influence on risk-taking behavior. Adolescent sensation seekers not only associate the positive effects with risky behaviors, but they also seek out peers with similar interests. These peers create a social group that may encourage risk-taking behavior and increases the positive affect associated with the experience. The influence of peers on risky behavior is greater than that of sensation-seeking alone. However, the combination of sensation-seeking and peer influence has a significantly greater influence on

risky adolescent behavior than sensation-seeking or peer influence alone (Romber, 2012).

Delayed Executive Functioning

Another area of the brain that may influence risk-taking tendencies in adolescence is the prefrontal cortex. As previously mentioned, this part of the brain is not fully developed until early adulthood. The developed prefrontal cortex allows us to assess situations, consider consequences, and control impulses adequately. The gap between the increase in the sensation-seeking of the rewards system and the slower-developing prefrontal cortex puts adolescents at particular jeopardy for risk-taking behaviors and potentially unhealthy outcomes.

Brain research data has led to the idea of 'frontalization,' whereby the prefrontal cortex gradually becomes able to oversee and regulate the behavioral responses initiated by the more primitive limbic structures. However, when stress, arousal, or sensations become extreme, the adolescent brain is flooded with impulses that overwhelm the prefrontal cortex, and as a result, adolescents engage in increased risk-taking behaviors and emotional outbursts. With an immature prefrontal cortex, even if teens understand that something is dangerous, they may still engage in risky behavior. Recognizing the asynchrony of development of the regions of the brain helps us to see adolescent risk-taking in a whole new light.

The Influence of Experience

Risk-taking behavior is not uniform across adolescence or among adolescents. For example, the Seattle Social Development Project (Hill, White, Hawkins, & Catalano, 2000) found that 70% of youth

13 to 18 had not engaged in binge drinking. Three percent reported binge drinking starting at 13 years old and continued through age 18. Another four percent engaged in binge drinking later in adolescence. And 23% didn't binge drink until they were 18 years old. The likelihood f engaging in risk-taking behavior and the timing of these behaviors may be influenced by experience—either early life experiences that increase the propensity toward risk-taking or normative age-graded influences.

For some teens, their impulsivity and risk-taking behavior may have begun years before and persisted into adolescence. There is considerable evidence that adolescent risk-taking, for some, is due to impaired impulse control that occurred in the first years of life due to exposure to severe, chronic stress. This type of stress can have a 'toxic' effect on a range of behaviors and health outcomes. The Adverse Childhood Experiences (ACE) study (CDC, 2019) found that exposure to abuse, neglect, domestic or community violence, familial substance abuse or mental illness, separation from parents, homelessness, discrimination, natural disasters, and war are serious traumas that result in toxic stress. Those facing adverse childhood experiences are at higher risk for adolescent pregnancy, early sexual activity, multiple sexual partners, intimate partner violence, substance abuse, depression, suicide, and poor physical health. In general, the more adverse childhood experiences, the more risky behaviors in adolescence.

The second source for risk, as previously discussed, is the increase in sensation-seeking associated with brain development. Those changes encourage experimentation with adult-like behavior. These risky behaviors are part of normative age-graded influence due to a lack of experience. To overcome the tendency toward these behaviors is to gain experience in taking risks. The role of experience is critical in developing the neural connectivity that allows for the conscious cognitive control of the emotions and passions of adolescence. Teens who take risks in relatively safe situations exercise the circuitry and develop the skills to "put on the brakes" in more dangerous situations (Giedd, 2004).

Decreasing the Risk

Mitigating the extremes of risk-taking and potential unhealthy outcomes is possible. There are two approaches to helping young people reduce risk and stay safe. First, early intervention, before children reach adolescence, is the best time to teach executive functioning and self-regulation skills that can reduce impulsivity. Second, teens need to gain life experience. When high sensation-seekers engage in risk-taking, they develop greater patience. Patience is a factor that reduces risk-taking behavior. This effect is amplified in conduct-disordered teens. Conduct disorder is a psychological diagnosis applied only to minors, characterized by impulsivity, aggression, deceitfulness, destructive behavior, and resistance to authority or rules. These youth are often sensation-seeking and take risks with the possibility of serious consequences. However, despite their greater risk-taking behavior, their consequences may actually result in them being less impatient than their low sensation-seeking peers (Turner & Piquero, 2002). It seems that teens need to engage in some risk-taking behavior to learn from the consequences of their experiences.

Adolescents are often mischaracterized as irrational loose cannons. However, while adolescents may be learning to think like adults, their brains are not fully developed. A hopped-up rewards system that can drown out warning signals about risk from an underdeveloped prefrontal cortex results in more risk-taking behaviors. Adolescent decisions are not always defined by impulsivity because of lack of brakes, but because of planned and enjoyable pressure to the accelerator. It is helpful to put all of these brain processes in a developmental context. Young people need to somewhat enjoy the thrill of risk-taking in order to complete the incredibly overwhelming task of growing up.

Substance Use

Adolescence is a time of rapid change and maturation. It is also a time of experimentation—with new hairstyles, clothes, attitudes, and behaviors. Some of these experiments are harmless. Others, such as using alcohol or other drugs, can have long-lasting harmful consequences. There are several reasons why it is important to identify and treat adolescent substance use.



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https://childpsychology.pressbooks.sunycreate.cloud/?p=76#oembed-1

Video 1. *Adolescent Substance Use, Addiction, and Treatment* discusses the prevalence of substance use and teens' susceptibility to abuse.

Substance use is common among adolescents. Alcohol, marijuana, and tobacco are the substances most commonly used by youth (Johnston et al., 2014), and alcohol often is the first substance to be used (Johnston et al., 2010). The percentage of young people who have used alcohol increases with age. By eighth grade, 28% of students have tried alcohol, and 12% have been drunk at least once; by twelfth grade, 68% of students have tried alcohol, and more than half have been drunk at least once (Johnston et al., 2014). In 2012, 45% of students in grades 9 through 12 reported ever having used marijuana, and 24% reported having used marijuana in the preceding 30 days. Between 2008 and 2012, the proportion of teens who used marijuana daily increased from 5% to 8% (PDFA, 2013). According to a survey published in 2014, 41% of students in grades

9 through 12 reported having tried cigarettes. Nearly one-quarter said they had used tobacco in some form in the past 30 days (Kann et al., 2014). A substantial percentage of adolescents, including 15% of 12th graders, report misuse (i.e., use without a prescription) of prescription medication, especially stimulants and pain medications (Johnston et al., 2014).

Why do Adolescents use Drugs?

As we read above, most adolescents will use drugs or alcohol before reaching adulthood; however, the reasons for use can vary greatly. A popular model for understanding the reasons and levels of drug use involves viewing the behavior as a continuum. This continuum includes non-use and experimental drugs, casual, habitual, and compulsive drug use.

A non-user is someone that has never misuse drugs. An experimental user has used drugs a few times out of curiosity. Using substances may make them feel 'grown-up,' or they may do it as a form of rebellion against authority or rules. Using may be exciting for this teen. Typically, experimental users have no significant problems with drug use, and adults are not likely aware of the use.

When substance use becomes more common among peer groups, teens are more likely to engage in social use. Using drugs or alcohol might be a way of fitting in with some social groups or with friends. Teens may feel that they are more outgoing or social when under the influence of substances. Furthermore, some teens may use substances for fun or out of boredom. There may also be circumstantial-situational reasons for substance use, such as increasing awareness or creativity and lowering inhibitions. These casual users might engage in regular drug use, maybe 2 to 4 times per week. They still associate drug use with feeling excited or stimulated, and they make efforts to maintain control of their use. Their substance use may be frequent enough that the behavior

is difficult to hide from parents and school officials. Casual users may experience decreased school performance, loss of interest in previously enjoyed activities that do not involve drug use, and other atypical behaviors for the adolescent (e.g., increased lying).

As we see substance use intensify, the concern for the teen's health and safety increases. A habitual user is likely to use drugs daily, often with a particular group of friends that are also using. Drug use may be part of the group's norms and identity. Teens may also use substances to escape or to self-medicate. At this level of use, the teen may not necessarily lose control but experiences significant school and family problems. Drug use may no longer bring the excitement and stimulation previously sought. Instead, the adolescent may become impulsive, erratic, guilt-ridden, and depressed.

A compulsive user has lost control over their drug use. The person is using drugs several times per day, and they spend a significant part of their day in the procurement, maintenance, and use of a regular drug supply. These adolescents engage in behaviors that put their health and safety at risk. Their emotional state is often disorganized. Individuals in the last three categories – casual, habitual, and compulsive – are most likely to qualify for a substance use disorder diagnosis.

Risk Factors for Substance Abuse

There are certain factors that increase the risk of adolescent substance abuse. Teens that come from dysfunctional families or live in poverty are at higher risk of abuse. As are youth raised in cultures or communities where substance abuse is common. Adolescents that struggle academically or are lacking in social skills may also see higher rates of substance abuse. A highly concerning risk factor is early substance use. The earlier and the more a young person uses substances, the higher risk they are for developing a

substance disorder.

Substance use has its own risks and also is associated with other risky behaviors. Adolescent substance use poses both short-term and long-term risks. In the short term, drinking, for example, can result in unintentional injuries and death, suicidal behavior, motor vehicle crashes, intimate partner violence, and academic and social problems (Brown et al., 2008; Cole et al., 2011; Weitzman Nelson, 2004). These outcomes occur because excess alcohol consumption leads to decreased cognitive abilities, inaccurate perception of risk, and impaired bodily control. These effects, in combination with the fact that compared to adults, adolescents tend to be more physically active when under the influence of alcohol, put adolescents at greater risk of harm. For example, at blood alcohol concentrations greater than zero, adolescents are at increased risk of being fatally injured or involved in fatal crashes in single, two, and more vehicles compared with sober male drivers ages 21-34 (Voas et al., 2012). Marijuana use is associated with diminished lifetime achievement (Meier et al., 2012). Tobacco use results in poor health in the short and long term, and it can be a gateway to the use of other drugs (Sims, 2009). The risk of substance use is compounded because it is associated with other risky behaviors, such as unplanned, unprotected sex, which can result in pregnancy (Brown, 2008; Levy et al., 2009; Tapert et al., 2001). Adolescents who misuse prescription opioids are at high risk of transitioning to injection drugs and overdosing (McCabe et al., 2012). Any level of substance use can be harmful to adolescents—no amount is safe.

Adolescence is a particularly vulnerable period for brain development and maturation. Adolescence is a long period of intense neurodevelopmental growth and maturation. As a result, the adolescent brain is particularly vulnerable to the toxic effects of alcohol and other drugs and to the potential for addiction. Persistent marijuana use in adolescence, for example, is associated with neuropsychological impairments across a range of functional domains (Meier et al., 2012). Moreover, stopping use does not fully

restore neuropsychological functioning, suggesting particular harm to the adolescent brain.

Use tends to increase over time. National estimates of the prevalence of drinking indicate that older youth drink more and drink more heavily than do younger youth (SAMHSA, 2010). This fact makes it all the more important for pediatricians to start early with screening and brief intervention so as to prevent or delay alcohol use for as long as possible.

Substance use in adolescence is associated with harm in adulthood. The earlier an adolescent begins using substances, the greater are his or her chances of continuing to use and of developing substance use problems later in life. For example, compared to people who do not start drinking until they are young adults, people who begin to drink before age 15 are 5 times as likely to develop alcohol dependence or abuse (Chambers et al., 2003; Grant & Dawson, 1997; Hingson & Zha, 2009). Compared with adolescents who first try marijuana at age 18, those who begin using at 14 or younger are 6 times as likely to meet the criteria for illicit drug dependence or abuse later in life (SAMHSA, 2010). More than 80% of adults who smoke tobacco began before they were 18 (Sims, 2009).

Adolescents who report weekly or more frequent substance use are likely to have a severe substance use disorder. In some cases, by the time an adolescent has reached this point, parents are already aware of the drug use, although they may underestimate the seriousness of the problem. Adolescents with serious substance-use disorders require more-intensive care as soon as possible, including a comprehensive evaluation by a substance use specialist, assessment for co-occurring mental health disorders, and referral to treatment.

Prevention of Substance Abuse

Prevention of substance abuse during adolescence should be a multipronged and long term approach that involves the education of youth, families, and the community. Prevention education should begin as early as preschool and be specific to the target population (i.e., ethnicity, gender), establishing a culture against substance abuse. Effective programs for teens involve interactive education, such as peer discussions and role-playing, and focus on risk-reduction and fostering good decision-making skills.

D.A.R.E.–the drug prevention program that never worked

The primary goal of Drug Abuse Resistance Education (DARE) was to teach effective peer resistance and refusal skills so that adolescents can say "no" to drugs and their friends who may want them to use drugs. The secondary goals of the program were to build students' social skills and enhance their self-esteem, as these are believed to be linked to adolescent drug use.

DARE was developed in 1983 as a joint effort between the Los Angeles County (Calif.) School District and the Los Angeles Police Department. In 1986, the U.S. Congress passed the Drug-Free Schools and Communities Act to promote drug abuse education and prevention programs across the country, and DARE spread rapidly, with many school districts adopting it for their students. By 1994, DARE was the most widely used school-based drug

prevention program, showing up in all 50 states in the United States and spreading to six foreign countries.

Several large scale studies assessed the effectiveness of the DARE program. The findings consistently found no effects. There were no statistically significant differences between students participating in the DARE program and those that did not when comparing rates of drug use, attitudes toward drug use, or self-esteem.

Anxiety, Depression, And Self-Directed Violent Behavior

Developmental models of anxiety and depression treat adolescence as an important period, especially in terms of the emergence of differences and prevalence rates that persist through adulthood (Rudolph, 2009). Although the rates vary across specific anxiety and depression diagnoses, rates for some disorders are markedly higher in adolescence than in childhood or adulthood. For example, prevalence rates for anxiety disorders are about 19% in adults, but 32% in adolescents (NIMH, 2017). Adolescents are also more likely to experience depression (13%) compared to adults (7%) (NIMH, 2019). Rates of self-directed violence are also higher among teens (17%), followed by college students (15%), adults (5%), and children having the lowest rates (1.3%) (APA, 2015).

Anxiety

Occasional anxiety is an expected part of life. You might feel anxious when faced with a problem, before taking a test, or when making an important decision. But anxiety disorders involve more than temporary worry or fear. For a person with an anxiety disorder, the anxiety does not go away and can get worse over time. The symptoms can interfere with daily activities such as job performance, school work, and relationships.

The wide variety of **anxiety disorders** differ by the objects or situations that induce them but share features of excessive anxiety or worry about a variety of things. Fear and anxiety can cause significant problems in areas of their life, such as social interactions, school, and work. Anxiety also manifests in physiological and psychological responses, such as feeling restless, fatigued, difficulty concentrating, irritability, muscle tension, and sleep problems.



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Video 2. *Fight, Flight, Freeze–Anxiety Explained for Teens* identifies symptoms and responses to the experience of anxiety.

The following data pertains to the compiling of statistics for any anxiety disorder including, panic disorder, generalized anxiety disorder, agoraphobia, specific phobia, social anxiety disorder, post-traumatic stress disorder, obsessive-compulsive disorder, and separation anxiety disorder. An estimated 31.9% of adolescents have an anxiety disorder. Of adolescents with any anxiety disorder, an estimated 8.3% had severe impairment. The prevalence of any

anxiety disorder among adolescents was higher for females (38.0%) than for males (26.1%). The prevalence of any anxiety disorder was similar across age groups.

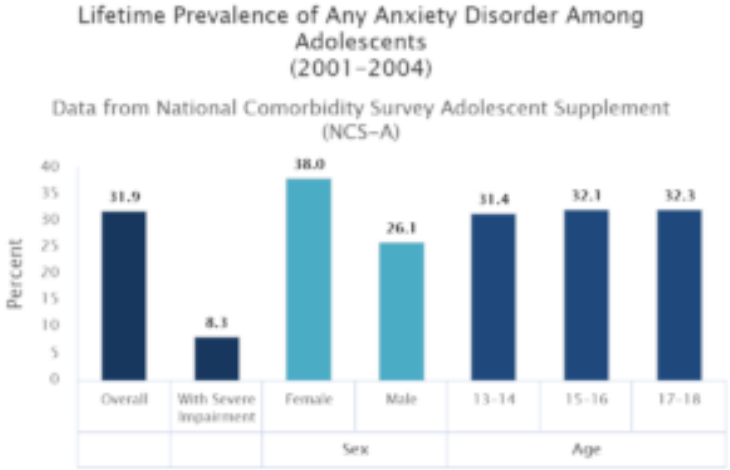


Figure 1. Prevalence of any anxiety disorder among adolescents (2001-2004). Data from the National Comorbidity Survey Adolescent Supplement (NCS-A).

Anxiety disorders are generally treated with psychotherapy, medication, or both. Psychotherapy or "talk therapy" can help people with anxiety disorders. To be effective, psychotherapy must be directed at the person's specific anxieties and tailored to his or her needs. Medication does not cure anxiety disorders but can help relieve symptoms. Medication for anxiety is prescribed by doctors, such as a psychiatrist or primary care provider. The most common classes of medications used to combat anxiety disorders are anti-anxiety drugs (such as benzodiazepines), antidepressants, and beta-blockers. Some people with anxiety disorders might benefit from joining a self-help or support group and sharing their problems and achievements with others. Talking with a trusted friend or member

of the clergy can also provide support, but it is not necessarily a sufficient alternative to care from a doctor or other health professional. Stress management techniques and meditation can help people with anxiety disorders calm themselves and may enhance the effects of therapy. Research suggests that aerobic exercise can help some people manage their anxiety; however, exercise should not take the place of standard care, and more research is needed.

The Prevalence of Mental Illness in youth

Video 3. In *The Prevalence of Mental Illness in* Youth, McKenna Knapp discusses the prevalence of mental health issues in young people and how the pressures to measure up in high school may contribute.



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Depression

Sadness is something we all experience. It is a normal reaction to a loss or a setback, but it usually passes with a little time. Depression

is different. Depression (**major depressive disorder**) is a medical illness that can interfere with a person's ability to handle daily activities, such as sleeping, eating, or managing responsibilities. Depression is common, but that doesn't mean it isn't serious. Well-meaning friends or family members may try to tell someone with depression to "snap out of it," "just be positive," but depression is not a sign of weakness or a character flaw. Many people with depression need treatment to get better.

Depression is characterized by feelings of deep sadness and hopelessness that disrupts all normal, regular activities. However, teens may not identify feelings of sadness and instead report feeling more irritable and angry. Often, when depressed, people feel worthless and excessively guilty. They withdraw from activities that they normally enjoy and spend more time alone. Changes in appetite and sleeping habits (more or less than normal) are common. People with depression may experience fatigue, having low energy, and also feel restless. Physical aches and pains with no associated reason may occur, like muscle, stomach, or headaches. Cognitive functioning, such as attention, concentrating, memory, and decision-making, may be impaired. And while not necessary for a depression diagnosis, thoughts of death or suicide may be an issue.

Teens with depression may sulk, get into trouble at school, be negative and irritable, and feel misunderstood. It can be difficult to determine whether an adolescent is depressed or just "being a teenager." Consider how long the symptoms have been present, how severe they are, and how different the teen is acting from his or her usual self. Teens with depression may also have other disorders such as anxiety, eating disorders, or substance abuse.



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https://childpsychology.pressbooks.sunycreate.cloud/?p=76#video-76-1

Video 5.7.4. *Adolescent Depression* provides information on identifying symptoms of depression in teens and how to respond to concerns.

The figure below shows the prevalence of major depressive episodes among U.S. adolescents in 2017. An estimated 3.2 million adolescents aged 12 to 17 in the United States had at least one major depressive episode. This number represented 13.3% of the U.S. population aged 12 to 17. The prevalence of major depressive episodes was higher among adolescent females (20.0%) compared to males (6.8%). The prevalence of major depressive episode was highest among adolescents reporting two or more races (16.9%).

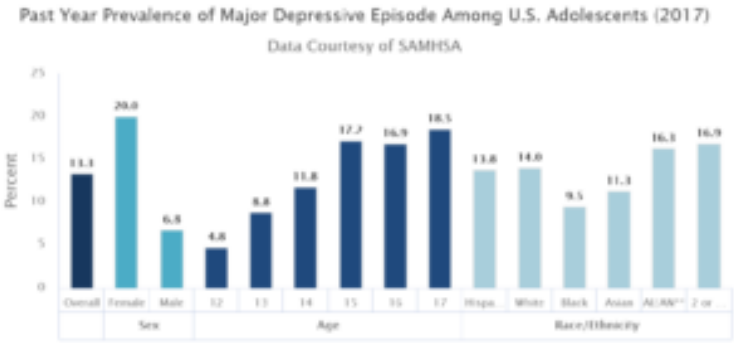


Figure 5.7.2. Prevalence of major depressive episode among US adolescents (2017). Data from SAMHSA.

Causes of depression include many factors such as genetics and early childhood experiences that predate adolescence, but puberty

may push vulnerable children, especially girls, into despair. During puberty, the rate of major depression more than doubles to an estimated 13%, affecting about one in five girls and one in ten boys. The gender difference occurs for many reasons, biological and cultural (Uddin et al., 2010).

Developmental models focus on interpersonal contexts in both childhood and adolescence that foster depression and anxiety (e.g., Rudolph, 2009). Family adversity, such as abuse and parental psychopathology during childhood, sets the stage for social and behavioral problems during adolescence. Adolescents with such problems generate stress in their relationships (e.g., by resolving conflict poorly and excessively seeking reassurance) and select into more maladaptive social contexts (e.g., "misery loves company" scenarios in which depressed youths select other depressed youths as friends and then frequently co-ruminate as they discuss their problems, exacerbating negative affect and stress). These processes are intensified for girls compared with boys because girls have more relationship-oriented goals related to intimacy and social approval, leaving them more vulnerable to disruption in these relationships. Anxiety and depression then exacerbate problems in social relationships, which in turn contribute to the stability of anxiety and depression over time.

Depression, even in the most severe cases, can be treated. The earlier that treatment can begin, the more effective it is. Depression is usually treated with medications, psychotherapy, or a combination of the two. An estimated 19.6% received care by a mental health professional alone, and another 17.9% received combined care by a mental health professional and medication treatment. Treatment with medication alone was least common (2.4%). Approximately 60.1% of adolescents with major depressive episode did not receive treatment.

Antidepressants are medicines that treat depression. They may help improve the way the brain uses certain chemicals that control mood or stress. Trying several different antidepressant medicines may be necessary before finding the one that improves symptoms

and has manageable side effects. Antidepressants take time – usually 2 to 4 weeks – to work, and often, symptoms such as sleep, appetite, and concentration problems improve before mood lifts, so it is important to give medication a chance before reaching a conclusion about its effectiveness.

Several types of psychotherapy (also called "talk therapy" or, in a less specific form, counseling) can help people with depression. Examples of evidence-based approaches specific to the treatment of depression include cognitive-behavioral therapy (CBT), interpersonal therapy (IPT), and problem-solving therapy. CBT can help an individual with depression change negative thinking and interpret the environment and interactions in a positive, realistic way. IPT is designed to help an individual understand and work through troubled relationships or major issues that may cause depression or make it worse.

Teenagers usually rely on parents, teachers, or other caregivers to recognize their suffering and get them the treatment they need. Many teens don't know where to go for mental health treatment or believe that treatment won't help. Others don't get help because they think depression symptoms may be just part of the typical stress of school or being a teen. Some teens worry about what other people will think if they seek mental health care.

Self-Directed Violence

Self-directed violence (SDV) encompasses a range of violent behaviors, including acts of fatal and nonfatal suicidal behavior, and non-suicidal self-injury (i.e., behaviors where the intention is not to kill oneself, as in self-mutilation). Recognizing signs of self-directed violence and interventions to help people engaging in this behavior can save a life and help get them treatment.

Non-suicidal self-injury (NSSI), also referred to as self-harm, self-mutilation, or cutting, is a "deliberate, self-inflicted injury

without suicidal intent or for socially sanction purposes (such as tattoos or piercings). NSSI is most often associated with 'cutting,' but means of self-harm often also include scratching, punching, punching oneself, banging objects with the intention of injury, biting, tearing of the skin, or burning. The location of the injury may also be an indicator of the severity of the psychological disturbance. Injuries to the face, eye, jugular, or genitals may be more concerning. Although not a suicide attempt, NSSI is associated with suicide and can result in an accidental fatality (Whitlock, 2010).

The average age of the first NSSI is between 11 and 15 years old. The prevalence of at least one incident NSSI is estimated to be 12-37% in high school populations and 12 to 20% in late adulthood and early adulthood cohorts, with 6-7% of adolescents reported repetitive NSSI in the last year. Of those reporting repetitive incidents, 40% reported stopping the behavior within a year of starting, and the vast majority (79.8%) stopped within five years (Whitlock, 2010).

While we might presume that NSSI behavior is associated with mental illness, like depression and anxiety, that is not always the case. Forty-four percent of people that engage in common NSSI do not have any co-morbidity. This type of NSSI includes self-injurious behaviors that are (1) compulsive or ritualistic (like trichotillomania), (2) episodic or occasional, with no identification as a person that self-harms, (3) repetitive with a self-harming identity. Common NSSI can be mild, moderate, or severe, depending on the severity of the injuries (Whitlock, 2010).

The reasons for NSSI are psychological, social, and biological and often step from a history of childhood adversity, comorbid psychological disorders, and emotional dysregulation. The psychological reasons are the most common and involve reducing psychological pain, expressing distress, and distracting oneself from other negative stimuli. Fewer teens report social reasons for NSSI, such as seeking attention or copying peers. Social factors, like peer reinforcement of the behavior, can increase the likelihood of repetitive NSSI. Those reporting "getting a rush" or "feeling normal"

from NSSI may have biological reasons for the behavior. These individuals may have chronically low levels of certain neurotransmitters in their brains. The neurochemical response to injury may bring these neurotransmitter levels to a more normal level and help them regulate emotions. This may be the reason that some people are dependent on NSSI (Whitlock, 2010).

The correlation between NSSI and suicide-related behaviors is well known, but the nature of that relationship is rather paradoxical. Moving from NSSI to suicide-related behaviors may appear to be a predictable progression in severity—without intervention, those engaged in NSSI may get worse and eventually become suicidal. However, experts agree that NSSI may actually help alleviate the distress that could lead to suicide-related behavior, at least temporarily. NSSI could be a tool for coping with distress and avoid suicide (Whitlock, 2010).

In 2017, suicide was the second leading cause of death for people aged 10-19. After a stable period from 2000 to 2007, suicide death rates for teens are now increasing. Distressing thoughts about killing oneself become most common at about age 15 (Berger, 2019) and can lead to a variety of suicide-related behaviors.

Suicide-related behaviors include the following:

- **Suicide:** Death caused by self-directed injurious behavior with any intent to die.
- **Suicide attempt:** A non-fatal self-directed potentially injurious behavior with any intent to die as a result of the behavior. A suicide attempt may or may not result in injury.
- **Suicidal ideation:** Thinking about, considering, or planning for suicide.

Suicide-related behavior is complicated and rarely the result of a single source of trauma or stress. Youth who are at increased risk for suicide-related behavior are dealing with a complex interaction of multiple relationships (peer, family, or romantic), mental health, and school stressors. Often, people who engage in suicide-related

behavior experience overwhelming feelings of helplessness and hopelessness. Involvement with bullying behavior is one stressor that may significantly contribute to feelings of helplessness and hopelessness that raise the risk of suicide.

Youth are at higher risk for suicide-related behaviors if they experienced violence, including child abuse, bullying, or sexual violence, and cannot cope with problems in healthy ways and solve problems peacefully. Teens with disabilities, learning differences, sexual/gender identity differences, or cultural differences are often most vulnerable to being bullied. Teens who report frequently bullying others are at high, long-term risk for suicide-related behavior. Youth who report both being bullied and bullying others (sometimes referred to as bully-victims) have the highest rates of negative mental health outcomes, including depression, anxiety, and thinking about suicide.

The behaviors listed below may be signs that someone is thinking about suicide.

- Talking about wanting to kill themselves or making a plan to kill themselves
- Talking about feeling empty, hopeless, or having no reason to live
- Talking about great guilt or shame
- Talking about feeling trapped or feeling that there are no solutions
- Feeling unbearable pain (emotional pain or physical pain)
- Talking about being a burden to others
- Using alcohol or drugs more often
- Acting anxious or agitated
- Withdrawing from family and friends
- Changing eating and/or sleeping habits
- Showing rage or talking about seeking revenge
- Taking great risks that could lead to death, such as driving extremely fast
- Talking or thinking about death often

- Displaying extreme mood swings, suddenly changing from very sad to very calm/happy
- Giving away important possessions
- Saying goodbye to friends and family
- Putting affairs in order, making a will

If these warning signs apply to you or someone you know, get help as soon as possible, particularly if the behavior is new or has increased recently. Call the National Suicide Prevention Lifeline (Lifeline) at 1-800-273-TALK (8255), or text the Crisis Text Line (text HELLO to 741741). Both services are free and available 24 hours a day, seven days a week. The following recommendations are five action steps to help someone in emotional pain:

- ASK: "Are you thinking about killing yourself?" It's not an easy question, but studies show that asking at-risk individuals if they are suicidal does not increase suicides or suicidal thoughts.
- KEEP THEM SAFE: Reducing a suicidal person's access to highly lethal items or places is an important part of suicide prevention. While this is not always easy, asking if the at-risk person has a plan and removing or disabling the lethal means can make a difference.
- BE THERE: Listen carefully and learn what the individual is thinking and feeling. Research suggests acknowledging and talking about suicide may reduce rather than increase suicidal thoughts.
- HELP THEM CONNECT: Save the National Suicide Prevention Lifeline's (1-800-273-TALK (8255)) and the Crisis Text Line's number (741741) in your phone, so it's there when you need it. You can also help make a connection with a trusted individual like a family member, friend, spiritual advisor, or mental health professional.
- STAY CONNECTED: Staying in touch after a crisis or after being discharged from care can make a difference. Studies

have shown the number of suicide deaths goes down when someone follows up with the at-risk person.



Figure 5.7.3. Five action steps for helping someone in emotional pain.

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://childpsychology.pressbooks.sunycreate.cloud/?p=76#oembed-4

Glossary

adolescent growth spurt: rapid increase in the individual's height and weight during puberty resulting from simultaneous release of growth hormones, thyroid hormones, and androgens. Males experience their growth spurt about two years later, on average, than females

adrenarche: an increase in the production of androgens by the adrenal cortex that usually occurs during the eighth or ninth year of life and typically peaks at around 10 to 14 years of age and is eventually involved in the development of pubic hair, body odor, skin oiliness, and acne

amygdala: part of the limbic system in the brain, which is involved with emotions and emotional responses and is particularly active during puberty

anorexia nervosa: an eating disorder characterized by self-starvation. Affected individuals voluntarily under-eat and often over-exercise, depriving their vital organs of nutrition. Anorexia can be fatal

axons: fibers that extend from the neurons and transmit electrochemical impulses from that neuron to the dendrites of other neurons

bed-sharing: when two or more people sleep in the same bed

binge-eating disorder: an eating disorder characterized by recurrent episodes of eating large quantities of food (often very quickly and to the point of discomfort); a feeling of a loss of control during the binge; experiencing shame, distress, or guilt afterwards; and not regularly using unhealthy compensatory measures (e.g., purging) to counter the binge eating. It is the most common eating disorder in the United States

body dissatisfaction: negative subjective evaluation of the weight and shape of one's own body, which may predict the onset, severity, and treatment outcomes of eating disorders

body image: a person's idea of how his or her body looks

bulimia nervosa: an eating disorder characterized by binge eating and subsequent purging, usually by induced vomiting and/or use of laxatives

cephalocaudal: refers to growth and development that occurs from the head down

circumcision: the surgical removal of the foreskin of the penis

colostrum: the first secretion from the mammary glands after giving birth, rich in antibodies

cortex: the outer layers of the brain in humans and other mammals. Most thinking, feeling, and sensing involves the cortex

co-sleeping: a custom in which parents and their children (usually infants) sleep together in the same room

dendrites: fibers that extend from neurons and receive electrochemical impulses transmitted from other neurons via their axons

dopamine: a neurotransmitter in the brain that plays a role in pleasure and the reward system; increases in the limbic system and later in the prefrontal cortex during adolescence

estrogen: primary female sex hormone that is responsible for the development and regulation of the female reproductive system and secondary sex characteristics

failure to thrive: decelerated or arrested physical growth (height and weight measurements fall below the third or fifth percentile or a downward change in growth across two major growth percentiles) and is associated with abnormal growth and development

fine motor skills: physical abilities involving small body movements, especially of the hands and fingers, such as drawing and picking up a coin. The word "fine" in this context means "small"

frontal lobes: the parts of the brain involved in impulse control, planning, and higher-order thinking; still developing in adolescence

gonad: a sex organ that produces gametes; specifically, a testicle or ovary

gonadarche: refers to the earliest gonadal changes of puberty. In response to pituitary gonadotropins, the ovaries in girls and the

testes in boys begin to grow and increase the production of sex steroids, especially estradiol and testosterone

gross motor skills: voluntary movements including the use of large muscle groups such as the arms and legs. The word "gross" in this context means "big"

immunization: a process that stimulates the body's immune system by causing the production of antibodies to defend against attack by a specific contagious disease

infantile marasmus: starvation due to a lack of calories and protein

kwashiorkor: also known as the "disease of the displaced child," results in a loss of appetite and swelling of the abdomen as the body begins to break down the vital organs as a source of protein

limbic system: structures in the brain (including the amygdala) that involve processing emotional experience and social information and determining rewards and punishments; develops years before the prefrontal cortex

malnutrition: a condition that results from eating a diet in which one or more nutrients are deficient

masturbation: sexual self-stimulation, usually achieved by touching, stroking, or massaging the male or female genitals until this triggers an orgasm

melatonin: sleep hormone whose levels rise later at night and decrease later in the morning for teens, compared to children and adults

menarche: a girl's first menstrual period, signaling that she has begun ovulation. Pregnancy is biologically possible, but ovulation and menstruation are often irregular for years after menarche

milk anemia: an iron deficiency in infants who have been maintained on a milk diet for too long

motor skills: the word "motor" refers to the movement of the muscles. Motor skills refer to our ability to move our bodies and manipulate objects

muscle dysmorphia: sometimes called "reverse anorexia," this is

an obsession with being small and underdeveloped; extreme concern with becoming more muscular

myelin: a coating of fatty tissues around the axon of the neuron

myelination: an aspect of brain maturation in which more myelin is formed around the axons of neurons, thereby increasing neural transmission

neurons: nerve cells in the central nervous system, especially in the brain

neurotransmitters: brain chemicals that carry information from the axon of a sending neuron to the dendrites of a receiving neuron

percentile: a point on a ranking scale of 0 to 100. The 50th percentile is the midpoint; half of the infants in the population being studied rank higher, and half rank lower

perception: the process of interpreting what is sensed

pincer grasp: a developmental milestone that typically occurs at 9 to 12 months of age; the coordination of the index finger and thumb to hold smaller objects; represents a further development of fine motor skills

prefrontal cortex: the area of the cortex at the very front of the brain that specializes in anticipation, planning, and impulse control

primary sex characteristics: the parts of the body that are directly involved in reproduction, including the vagina, uterus, ovaries, testicles, and penis

proximodistal: development that occurs from the center or core of the body in an outward direction

pruning: the process by which unused connections in the brain atrophy and die

puberty: the period of rapid growth and sexual development that begins in adolescence

reflexes: the inborn behavioral patterns that develop during uterine life and are fully present at birth. These are involuntary movements (not learned) or actions that are essential for a newborn's survival immediately after birth and include: sucking, swallowing, blinking, urinating, hiccuping, and defecating

secondary sex characteristics: physical traits that are not directly

involved in reproduction but that indicate sexual maturity, such as a man's beard or a woman's breasts

sensation: the interaction of information with the sensory receptors

serotonin: "calming chemical," a neurotransmitter in the brain involved with the regulation of mood and behavior; serotonin levels increase in the limbic system during adolescence

sexually transmitted infections (STIs): diseases spread by sexual contact, including syphilis, gonorrhea, genital herpes, chlamydia, and HIV/AIDS

spermarche: a boy's first ejaculation of sperm. Erections can occur as early as infancy, but ejaculation signals sperm production. Spermarche may occur during sleep (nocturnal emission or "wet dream") or via direct stimulation

sudden infant death syndrome (SIDS): a situation in which a seemingly healthy infant, usually between 2 and 6 months old, suddenly stops breathing and dies unexpectedly while asleep

synapses: the intersection between the axon of one neuron to the dendrites of another neuron

synaptic pruning: the selective elimination of non-essential synapses and the strengthening of important neural connections

testosterone: the primary male sex hormone that plays a key role in developing male reproductive tissues such as testes and prostate and promoting secondary sexual characteristics such as increased muscle and bone mass and the growth of body hair. Females also produce testosterone, but at a lower level than males

transient exuberance: the great, but temporary increase in the number of dendrites that develop in an infant's brain during the first two years of life

COGNITIVE DEVELOPMENT IN INFANCY THROUGH ADOLESCENCE

Learning outcomes

- Describe each of Piaget's theories and stages of sensorimotor intelligence
- Explain learning and memory abilities in infants and toddlers
- Describe stages of language development during infancy
- Compare theories of language development in toddlers
- Explain the procedure, results, and implications of Hamlin and Wynn's research on moral reasoning in infants
- Illustrate limitations in early childhood thinking, including animism, egocentrism, and conservation errors
- Explain theory of mind
- Explain language development and the importance of language in early childhood and middle childhood
- Describe Vygotsky's model, including the zone of proximal development
- Describe key characteristics of Piaget's concrete

operational intelligence
- Explain the information processing theory of memory
- Evaluate the impact of labeling on children's self-concept and social relationships
- Describe autism spectrum disorders
- Identify common learning disabilities such as dyslexia and attention deficit hyperactivity disorder
- Compare Gardner's theory of multiple intelligences and Sternberg's triarchic theory of intelligence
- Apply the ecological systems model to explore children's experiences in schools
- Describe cognitive abilities and changes during adolescence
- Describe the role of secondary education in adolescent development

In addition to rapid physical growth, young children also exhibit significant development of their cognitive abilities, particularly in language acquisition and in the ability to think and reason. You already learned a little bit about Piaget's theory of cognitive development, and in this section, we'll apply that model to cognitive tasks during infancy and toddlerhood. Piaget described intelligence in infancy as sensorimotor or based on direct, physical contact where infants use senses and motor skills to taste, feel, pound, push, hear, and move in order to experience the world. These basic motor and sensory abilities provide the foundation for the cognitive skills that will emerge during the subsequent stages of cognitive development.

Early childhood is a time of pretending, blending fact and fiction, and learning to think of the world using language. As young children move away from needing to touch, feel, and hear about the world

toward learning basic principles about how the world works, they hold some pretty interesting initial ideas. For example, how many of you are afraid that you are going to go down the bathtub drain? Hopefully, none of you! But a child of three might really worry about this as they sit at the front of the bathtub. A child might protest if told that something will happen "tomorrow" but be willing to accept an explanation that an event will occur "today after we sleep." Or the young child may ask, "How long are we staying? From here to here?" while pointing to two points on a table. Concepts such as tomorrow, time, size and distance are not easy to grasp at this young age. Understanding size, time, distance, fact, and fiction are all tasks that are part of cognitive development in the preschool years.

Children in middle childhood are beginning a new experience—that of formal education. In the United States, formal education begins at a time when children are beginning to think in new and more sophisticated ways. According to Piaget, the child is entering a new stage of cognitive development where they are improving their logical skills. During middle childhood, children also make improvements in short term and long term memory.

Across the world, by the time a child is entering middle childhood, they are being educated in some form or fashion. In western society, most children are enrolled in a formal education program by the time they are in middle childhood.[1] That said, what children learn within that formal education program varies greatly across cultures. Further, most programs are set-up for typically developing children, but they may not be set-up to handle children who are accelerated learners or children with learning disabilities. In this section, we'll take a look at some of these educational differences and developments, as well as struggles and learning difficulties during middle childhood.

1. The World Bank. Primary school starting age (years). Retrieved from https://data.worldbank.org/indicator/SE.PRM.AGES.

Here we learn about adolescent cognitive development. In adolescence, changes in the brain interact with experience, knowledge, and social demands and produce rapid cognitive growth. The changes in how adolescents think, reason, and understand can be even more dramatic than their obvious physical changes. This stage of cognitive development, termed by Piaget as the formal operational stage, marks a movement from the ability to think and reason logically only about concrete, visible events to an ability to also think logically about abstract concepts.

Adolescents are now able to analyze situations logically in terms of cause and effect and to entertain hypothetical situations and entertain what-if possibilities about the world. This higher-level thinking allows them to think about the future, evaluate alternatives, and set personal goals. Although there are marked individual differences in cognitive development among teens, these new capacities allow adolescents to engage in the kind of introspection and mature decision making that was previously beyond their cognitive capacity.

Adolescence is a time of rapid cognitive development. Biological changes in brain structure and connectivity in the brain interact with increased experience, knowledge, and changing social demands to produce rapid cognitive growth. These changes generally begin at puberty or shortly thereafter, and some skills continue to develop as an adolescent ages. Development of executive functions, or cognitive skills that enable the control and coordination of thoughts and behavior, are generally associated with the prefrontal cortex area of the brain. The thoughts, ideas, and concepts developed during this period of life greatly influence one's future life and play a major role in character and personality formation.

There are two primary perspectives on adolescent thinking: constructivist and information-processing. The **constructivist perspective**, based on the work of Piaget, takes a quantitative, stage-theory approach. This view hypothesizes that adolescents' cognitive improvement is relatively sudden and drastic.

The **information-processing perspective** derives from the study of artificial intelligence and explains cognitive development in terms of the growth of specific components of the overall process of thinking, such as attention, memory, processing speed, and metacognition.

Constructivist Theories

Constructivism is a perspective on learning focused on how people actively create (or "construct") knowledge out of experiences. Constructivist models of learning differ about how much a learner constructs knowledge independently, compared to how much he or she takes cues from people who may be more of an expert and who help the learner's efforts (Fosnot, 2005; Rockmore, 2005). These are called **psychological constructivism** (changes in thinking resulting from individual experiences) and **social constructivism** (changes in thinking due to assistance from others), even though both versions are, in a sense, explanations about thinking within individuals.

The Piagetian version of psychological constructivist learning is rather "individualistic," in the sense that it does not say much about how other people involved might assist with learning. Parents and teachers are left lingering on the sidelines with few significant responsibilities for helping learners to construct knowledge. Piaget did recognize the importance of helping others in his theory, calling the process of support or assistance social transmission; however, he did not emphasize this aspect of constructivism. Piaget was more interested in what learners could figure out on their own (Salkind, 2004). Partly for this reason, his theory is often considered less about learning and more about development, which is a long-term change in a person resulting from multiple experiences. For the same reason, educators have often found Piaget's ideas especially helpful for thinking about students' readiness to learn.

Unlike Piaget's rather individually oriented version of constructivism, some psychologists have focused on the interactions between a learner and more knowledgeable individuals. One early expression of this viewpoint came from the American psychologist Jerome Bruner (1960, 1966, 1996), who became convinced that students could usually learn more than had been traditionally expected as long as they were given appropriate

guidance and resources. He called such support instructional scaffolding— literally meaning a temporary framework, like one used in constructing a building, that allows a much stronger structure to be built within it. The reason for such a bold assertion was Bruner's belief in scaffolding—his belief in the importance of providing guidance in the right way and at the right time. When scaffolding is provided, students seem more competent and "intelligent," and they learn more.

Similar ideas were proposed by Lev Vygotsky (1978), whose writing focused on how a learner's thinking is influenced by relationships with others who are more capable, knowledgeable, or expert than the learner. Vygotsky proposed that when a person is learning a new skill or solving a new problem, he or she can perform better if accompanied and helped by an expert than if performing alone—though still not as well as the expert.

The social version of constructivism, however, highlights the responsibility of the expert for making learning possible. He or she must not only have knowledge and skill but also know how to arrange experiences that make it easy and safe for learners to gain knowledge and skill themselves. In addition to knowing what is to be learned, the expert (i.e., the teacher) also has to break the content into manageable parts, offer the parts in a sensible sequence, provide for suitable and successful practice, bring the parts back together again at the end, and somehow relate the entire experience to knowledge and skills already meaningful to the learner.

Psychological Constructivism

In chapter 3, we briefly discussed Piaget and his cognitive development theory. Piaget believed that when we are faced with new information that we experience a cognitive disequilibrium. In response, we are continuously trying to regain cognitive homeostasis through adaptation. Piaget also proposed that through maturation we progress through four stages of cognitive development. As Piaget believed that adolescence was the start of the fourth stage, we will focus on the cognitive developments that occur during this stage.

Adaptation

When it comes to maintaining cognitive equilibrium, young people have much more of a challenge because they are constantly being confronted with new situations. All of this new information needs to be organized. The framework for organizing information is referred to as a **schema.** We develop schemata through the processes of adaptation. Adaptation can occur through assimilation and accommodation.



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https://childpsychology.pressbooks.sunycreate.cloud/?p=81#oembed-8

Video 1. *Semantic Networks and Spreading Activation* explains the creation and use of schemas.

Sometimes when we are faced with new information, we can simply fit it into our current schema; this is called **assimilation.** For example, a student is given a new math problem in class. They use previously learned strategies to try to solve the problem. While the problem is new, the process of solving the problem is something familiar to the student. The new problem fits into their current understanding of the math concept.

Not all new situations fit into our current framework and understanding of the world. In these cases, we may need **accommodation**, which is expanding the framework of knowledge to accommodate the new situation. If the student solving the math problem could not solve it because they were missing the strategies necessary to find the answer, they would first need to learn these strategies, and then they could solve the problem.

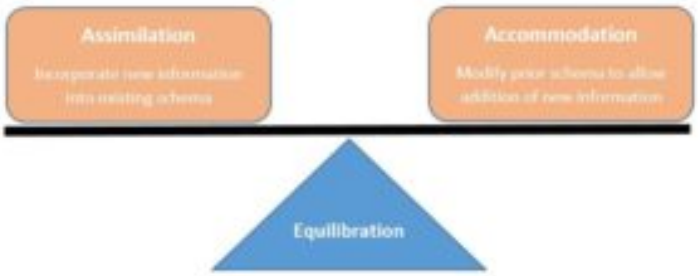


Figure 1. Model of Piaget's adaptation theory.

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Video 2. *Schemas, Assimilation, and Accommodation* explains Piaget's theory of constructing schemas through adaptation.

Piaget's Stages of Cognitive Development

Piaget was a **psychological constructivist**: in his view, learning proceeded by the interplay of assimilation (adjusting new experiences to fit prior concepts) and accommodation (adjusting concepts to fit new experiences). The to-and-fro of these two processes leads not only to short-term learning but also to long-term **developmental change**. The long-term developments are really the main focus of Piaget's cognitive theory.

After observing children closely, Piaget proposed that cognition developed through distinct stages from birth through the end of adolescence. By stages he meant a sequence of thinking patterns with four key features:

1. They always happen in the same order.
2. No stage is ever skipped.
3. Each stage is a significant transformation of the stage before it.
4. Each later stage incorporated the earlier stages into itself.

Piaget proposed four major stages of cognitive development and

called them (1) sensorimotor intelligence, (2) preoperational thinking, (3) concrete operational thinking, and (4) formal operational thinking. Each stage is correlated with an age period of childhood, but only approximately.

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://childpsychology.pressbooks.sunycreate.cloud/?p=81#oembed-9

Video 3. *Piaget's Stages of Cognitive Development* explains the structure of the four stages and major cognitive developments associated with each stage.

Sensorimotor Stage



According to Piaget, children are in the sensorimotor stage from birth until the age of 2. This first stage is defined as the period when infants "think" by means of their senses and motor actions. As every new parent will attest, infants continually touch, manipulate, look, listen to, and even bite and chew objects. According to Piaget, these actions allow them to learn about the world and are crucial to their early cognitive development.

The infant's actions allow the child to represent (or construct simple concepts of) objects and events. A toy animal may be just a

confusing array of sensations at first. However, by looking, feeling, and manipulating it repeatedly, the child gradually organizes her sensations and actions into a stable concept, a *toy animal*. The representation acquires a permanence lacking in the individual experiences of the object, which are constantly changing. Because the representation is stable, the child "knows," or at least believes, that toy animal exists even if the actual *toy animal* is temporarily out of sight. Piaget called this sense of stability **object permanence**, a belief that objects exist whether or not they are actually present. It is a major achievement of sensorimotor development, and marks a qualitative transformation in how older infants (24 months) think about experience compared to younger infants (6 months).

During much of infancy, of course, a child can only barely talk, so sensorimotor development initially happens without the support of language. It might, therefore, seem hard to know what infants are thinking, but Piaget devised several simple, but clever, experiments to get around their lack of language. The results of these experiments suggest that infants do indeed represent objects even without being able to talk (Piaget, 1952). In one, for example, he simply hid an object (like a toy animal) under a blanket. He found that doing so consistently prompts older infants (18–24 months) to search for the object, but fails to prompt younger infants (less than six months) to do so. 'Something' motivates the search by the older infant even without the benefit of language, and the 'something' is presumed to be a permanent concept or representation of the object.

Substages of Sensorimotor Intelligence

For an overview of the substages of sensorimotor thought, it helps to group the six substages into pairs. The first two substages involve the infant's responses to its own body, call **primary circular**

reactions. During the first month first (substage one), the infant's senses, as well motor reflexes are the foundation of thought.

Substage One: *Reflexive Action (Birth through 1st month)*

This active learning begins with automatic movements or reflexes (sucking, grasping, staring, listening). A ball comes into contact with an infant's cheek and is automatically sucked on and licked. But this is also what happens with a sour lemon, much to the infant's surprise! The baby's first challenge is to learn to adapt the sucking reflex to bottles or breasts, pacifiers or fingers, each acquiring specific types of tongue movements to latch, suck, breath, and repeat. This adaptation demonstrates that infants have begun to make sense of sensations. Eventually, the use of these reflexes becomes more deliberate and purposeful as they move onto substage two.

Substage Two: *First Adaptations to the Environment (1st through 4th months)*

Fortunately, within a few days or weeks, the infant begins to discriminate between objects and adjust responses accordingly as reflexes are replaced with voluntary movements. An infant may accidentally engage in a behavior and find it interesting, such as making a vocalization. This interest motivates trying to do it again and helps the infant learn a new behavior that originally occurred by chance. The behavior is identified as circular and primary because it centers on the infant's own body. At first, most actions have to do with the body, but in months to come, will be directed more toward objects. For example, the infant may have different sucking motions for hunger and others for comfort (i.e. sucking a pacifier differently from a nipple or attempting to hold a bottle to suck it).

The next two substages (3 and 4), involve the infant's responses to objects and people, called **secondary circular reactions.** Reactions are no longer confined to the infant's body and are now interactions between the baby and something else.

Substage Three: *Repetition (4th through 8th months)*

During the next few months, the infant becomes more and more actively engaged in the outside world and takes delight in being able to make things happen by responding to people and objects. Babies try to continue any pleasing event. Repeated motion brings particular interest as the infant is able to bang two lids together or shake a rattle and laugh. Another example might be to clap their hands when a caregiver says "patty-cake." Any sight of something delightful will trigger efforts for interaction.

Substage Four: *New Adaptations and Goal-Directed Behavior (8th through 12th months)*

Now the infant becomes more deliberate and purposeful in responding to people and objects and can engage in behaviors that others perform and anticipate upcoming events. Babies may ask for help by fussing, pointing, or reaching up to accomplish tasks, and work hard to get what they want. Perhaps because of continued maturation of the prefrontal cortex, the infant becomes capable of having a thought and carrying out a planned, goal-directed activity such as seeking a toy that has rolled under the couch or indicating that they are hungry. The infant is coordinating both internal and external activities to achieve a planned goal and begins to get a sense of social understanding. Piaget believed that at about 8 months (during substage 4), babies first understood the concept of

object permanence, which is the realization that objects or people continue to exist when they are no longer in sight.

The last two stages (5 and 6), called **tertiary circular reactions**, consist of actions (stage 5) and ideas (stage 6) where infants become more creative in their thinking.

Substage Five: *Active Experimentation of "Little Scientists" (12th through 18th months)*

The toddler is considered a "little scientist" and begins exploring the world in a trial-and-error manner, using motor skills and planning abilities. For example, the child might throw their ball down the stairs to see what happens or delight in squeezing all of the toothpaste out of the tube. The toddler's active engagement in experimentation helps them learn about their world. Gravity is learned by pouring water from a cup or pushing bowls from high chairs. The caregiver tries to help the child by picking it up again and placing it on the tray. And what happens? Another experiment! The child pushes it off the tray again causing it to fall and the caregiver to pick it up again! A closer examination of this stage causes us to really appreciate how much learning is going on at this time and how many things we come to take for granted must actually be learned. This is a wonderful and messy time of experimentation and most learning occurs by trial and error.

Watch It

Video 4. *The Surprisingly Logical Minds of Babies* discusses how even babies think like little scientists.

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Substage Six: *Mental Representations (18th month to 2 years of age)*

The child is now able to solve problems using mental strategies, to remember something heard days before and repeat it, to engage in pretend play, and to find objects that have been moved even when out of sight. Take, for instance, the child who is upstairs in a room with the door closed, supposedly taking a nap. The doorknob has a safety device on it that makes it impossible for the child to turn the knob. After trying several times to push the door or turn the doorknob, the child carries out a mental strategy to get the door opened – he knocks on the door! Obviously, this is a technique learned from the past experience of hearing a knock on the door and observing someone opening the door. The child is now better equipped with mental strategies for problem-solving. Part of this stage also involves learning to use language. This initial movement from the "hands-on" approach to knowing about the world to the more mental world of stage six marked the transition to preoperational thinking, which you'll learn more about in a later module.



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Development of Object Permanence

A critical milestone during the sensorimotor period is the development of object permanence. Introduced during substage 4 above, **object permanence** is the understanding that even if something is out of sight, it continues to exist. The infant is now capable of making attempts to retrieve the object. Piaget thought that, at about 8 months, babies first understand the concept of objective permanence, but some research has suggested that infants seem to be able to recognize that objects have permanence at much younger ages (even as young as 4 months of age). Other researchers, however, are not convinced (Mareschal & Kaufman, 2012).[1] It may

1. Mareshcal, D. & Kauffman, J. (2012). Object Permanence in infancy:

be a matter of "grasping vs. mastering" the concept of objective permanence. Overall, we can expect children to *grasp* the concept that objects continue to exist even when they are not in sight by around 8 months old, but memory may play a factor in their consistency. Because toddlers (i.e., 12–24 months old) have *mastered* object permanence, they enjoy games like hide-and-seek, and they realize that when someone leaves the room they will come back (Loop, 2013). Toddlers also point to pictures in books and look in appropriate places when you ask them to find objects.

Watch It

Video 5. *Object Concept VOE Ramp Study* demonstrates various tests of object permanence. Although the styles and cinematography in this video are dated, the information is valuable in understanding how researchers, like Dr. Rene Baillargeon, study object permanence in young infants.



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Revisiting Baillargeon's drawbridge study. In Alan M. Slaster & Paul C. Quinn (Eds.), Developmental Psychology: Revisiting the classic studies. Thousand Oaks, CA: Sage.

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Preoperational Stage



Remember that Piaget believed that we are continuously trying to maintain balance in how we understand the world. With rapid increases in motor skill and language development, young children are constantly encountering new experiences, objects, and words. In the module covering main developmental theories, you learned that when faced with something new, a child may either assimilate it into an existing schema by matching it with something they already know or expand their knowledge structure to accommodate the new situation. During the preoperational stage, many of the child's existing schemas will be challenged, expanded, and rearranged. Their whole view of the world may shift.

In the **preoperational stage**, children ages 2 to 7 use their new ability to represent objects in a wide variety of activities, but they do not yet do it in ways that are organized or fully logical. One of the most obvious examples of this kind of cognition is **dramatic play**, the improvised make-believe of preschool children. If you have ever had responsibility for children of this age, you have likely witnessed such play. Ashley holds a plastic banana to her ear and says: "Hello,

Mom? Can you be sure to bring me my baby doll? OK!" Then she hangs up the banana and pours tea for Jeremy into an invisible cup. Jeremy giggles at the sight of all of this and exclaims: "Rinnng! Oh Ashley, the phone is ringing again! You better answer it." And on it goes.

In a way, children immersed in make-believe seem "mentally insane," in that they do not think realistically. But they are not truly insane because they have not really taken leave of their senses. At some level, Ashley and Jeremy always know that the banana is still a banana and not *really* a telephone; they are merely *representing* it as a telephone. They are thinking on two levels at once—one imaginative and the other realistic. This dual processing of experience makes dramatic play an early example of **metacognition**, or reflecting on and monitoring of thinking itself. Metacognition is a highly desirable skill for success in school, one that teachers often encourage (Bredekamp & Copple, 1997; Paley, 2005). Partly for this reason, teachers of young children (preschool, kindergarten, and even first or second grade) often make time and space in their classrooms for dramatic play, and sometimes even participate in it themselves to help develop the play further.

Egocentrism

Egocentrism in early childhood refers to the tendency of young children to think that everyone sees things in the same way as the child. Piaget's classic experiment on egocentrism involved showing children a three-dimensional model of a mountain and asking them to describe what a doll that is looking at the mountain from a different angle might see. Children tend to choose a picture that represents their own, rather than the doll's view. However, when children are speaking to others, they tend to use different sentence structures and vocabulary when addressing a younger child or an older adult. Consider why this difference might be observed. Do you

think this indicates some awareness of the views of others? Or do you think they are simply modeling adult speech patterns?

Watch It

Video 6. *Egocentrism and Perspective Taking* demonstrates a classic Piagetian task to assess egocentrism in a child. The task involves the child and the adult looking at a 3-dimensional model from one perspective and the child noting the objects they can see. The child and adult then switch positions. The child is asked to note what they see from their new position but then asked what the adult is now seeing from their perspective. The child was in that same seat only moments ago and should remember what they saw, but will they be able to imagine the adult's perspective? The first boy in this interview display egocentrism by believing that the adult sees the same thing as they do, even after switching positions. The second boy can take the adult's perspective, demonstrating that they no longer fall prey to egocentrism.



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Precausal Thinking

Similar to preoperational children's egocentric thinking is their structuring of cause-and-effect relationships based on their limited view of the world. Piaget coined the term "precausal thinking" to describe the way in which preoperational children use their own existing ideas or views, like in egocentrism, to explain cause-and-effect relationships. Three main concepts of causality, as displayed by children in the preoperational stage, include animism, artificialism, and transductive reasoning.

Animism is the belief that inanimate objects are capable of actions and have lifelike qualities. An example could be a child believing that the sidewalk was mad and made them fall down, or that the stars twinkle in the sky because they are happy. To an imaginative child, the cup may be alive, the chair that falls down and hits the child's ankle is mean, and the toys need to stay home because they are tired. Young children do seem to think that objects that move may be alive, but after age three, they seldom refer to objects as being alive (Berk, 2007). Many children's stories and movies capitalize on animistic thinking. Do you remember some of the classic stories that make use of the idea of objects being alive and engaging in lifelike actions?

Artificialism refers to the belief that environmental characteristics can be attributed to human actions or interventions. For example, a child might say that it is windy outside because someone is blowing very hard, or the clouds are white because someone painted them that color.

Finally, precausal thinking is categorized by transductive reasoning. **Transductive reasoning** is when a child fails to understand the true relationships between cause and effect. Unlike deductive or inductive reasoning (general to specific, or specific to general), transductive reasoning refers to when a child reasons from specific to specific, drawing a relationship between two separate events that are otherwise unrelated. For example, if a child hears

a dog bark and then a balloon pop, the child would conclude that because the dog barked, the balloon popped. Related to this is **syncretism,** which refers to a tendency to think that if two events occur simultaneously, one caused the other. An example of this might be a child asking the question, "if I put on my bathing suit will it turn to summer?"

Cognition Errors

Between about the ages of four and seven, children tend to become very curious and ask many questions, beginning the use of primitive reasoning. There is an increase in curiosity in the interest of reasoning and wanting to know why things are the way they are. Piaget called it the "intuitive substage" because children realize they have a vast amount of knowledge, but they are unaware of how they acquired it.

Centration and conservation are characteristic of preoperative thought. **Centration** is the act of focusing all attention on one characteristic or dimension of a situation while disregarding all others. An example of centration is a child focusing on the *number* of pieces of cake that each person has, regardless of the size of the pieces. Centration is one of the reasons that young children have difficulty understanding the concept of conservation. **Conservation** is the awareness that altering a substance's appearance does not change its basic properties. Children at this stage are unaware of conservation and exhibit centration. Imagine a 2-year-old and 4-year-old eating lunch. The 4-year-old has a whole peanut butter and jelly sandwich. He notices, however, that his younger sister's sandwich is cut in half and protests, "She has more!" He is exhibiting centration by focusing on the number of pieces, which results in a conservation error.

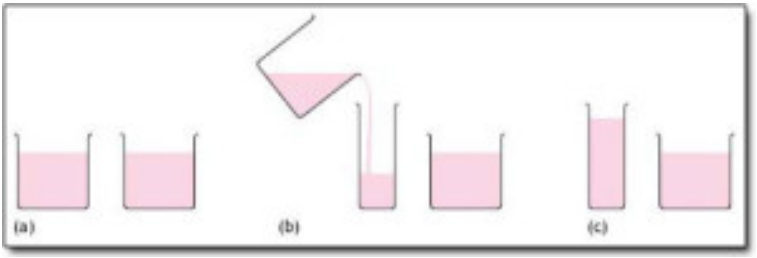


Figure 2. *A demonstration of the conservation of liquid. Does pouring liquid in a tall, narrow container make it have more?*

In Piaget's famous conservation task, a child is presented with two identical beakers containing the same amount of liquid. The child usually notes that the beakers do contain the same amount of liquid. When one of the beakers is poured into a taller and thinner container, children who are younger than seven or eight years old typically say that the two beakers no longer contain the same amount of liquid, and that the taller container holds the larger quantity (centration), without taking into consideration the fact that both beakers were previously noted to contain the same amount of liquid.

Irreversibility is also demonstrated during this stage and is closely related to the ideas of centration and conservation. **Irreversibility** refers to the young child's difficulty mentally reversing a sequence of events. In the same beaker situation, the child does not realize that, if the sequence of events was reversed and the water from the tall beaker was poured back into its original beaker, then the same amount of water would exist.

Centration, conservation errors, and irreversibility are indications that young children are reliant on visual representations. Another example of children's reliance on visual representations is their misunderstanding of "less than" or "more than". When two rows containing equal amounts of blocks are placed in front of a child with one row spread farther apart than the other, the child will think that the row spread farther contains more blocks.

Watch IT

Video 7. *Conservation* is demonstrated in this video. The young children struggle with the concept of conservation and demonstrate irreversibility.



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Class inclusion refers to a kind of conceptual thinking that children in the preoperational stage cannot yet grasp. Children's inability to focus on two aspects of a situation at once (centration) inhibits them from understanding the principle that one category or class can contain several different subcategories or classes. Preoperational children also have difficulty understanding that an object can be classified in more than one way. For example, a four-year-old girl may be shown a picture of eight dogs and three cats. The girl knows what cats and dogs are, and she is aware that they are both animals. However, when asked, "Are there more dogs or more animals?" she is likely to answer "more dogs." This is due to her difficulty focusing on the two subclasses and the larger class all at the same time. She may have been able to view the dogs as dogs or animals, but struggled when trying to classify them as both, simultaneously. Similar to this is a concept relating to intuitive thought, known as "transitive inference."

Transitive inference is using previous knowledge to determine the missing piece, using basic logic. Children in the preoperational stage lack this logic. An example of transitive inference would be when a child is presented with the information "A" is greater than "B" and "B" is greater than "C." The young child may have difficulty understanding that "A" is also greater than "C."

As the child's vocabulary improves and more schemes are developed, they are more able to think logically, demonstrate an understanding of conservation, and classify objects.



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Theory of Mind



***Figure 3**. Around age four, most children begin to understand that thoughts and realities do not always match.*

How do we come to understand how our mind works? The **theory of mind** is the understanding that the mind holds people's beliefs, desires, emotions, and intentions. One component of this is understanding that the mind can be tricked or that the mind is not always accurate.

A two-year-old child does not understand very much about how their mind works. They can learn by imitating others, they are starting to understand that people do not always agree on things they like, and they have a rudimentary understanding of cause and effect (although they often fall prey to transitive reasoning). By the time a child is four, their theory of the mind allows them to understand that people think differently, have different preferences, and even mask their true feelings by putting on a different face that differs from how they truly feel inside.

To think about what this might look like in the real world, imagine showing a three-year-old child a bandaid box and asking the child what is in the box. Chances are, the child will reply, "bandaids." Now imagine that you open the box and pour out crayons. If you now ask the child what they thought was in the box before it was opened, they may respond, "crayons." If you ask what a friend would have thought was in the box, the response would still be "crayons." Why?

Before about four years of age, a child does not recognize that the mind can hold ideas that are not accurate, so this three-year-old changes their response once shown that the box contains crayons. The child's response can also be explained in terms of egocentrism and irreversibility. The child's response is based on their current

view rather than seeing the situation from another person's perspective (egocentrism) or thinking about how they arrived at their conclusion (irreversibility). At around age four, the child would likely reply, "bandaids" when asked after seeing the crayons because by this age a child is beginning to understand that thoughts and realities do not always match.

Watch It

Video 8. *The Theory of Mind Test* demonstrates several versions of the false belief test to assess the theory of mind in young children.



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Theory of Mind and Social Intelligence

This awareness of the existence of mind is part of social intelligence and the ability to recognize that others can think differently about situations. It helps us to be self-conscious or aware that others can think of us in different ways, and it helps us to be able to be understanding or empathic toward others. This developing social

intelligence helps us to anticipate and predict the actions of others (even though these predictions are sometimes inaccurate). The awareness of the mental states of others is important for communication and social skills. A child who demonstrates this skill is able to anticipate the needs of others.

Impaired Theory of Mind in Individuals with Autism

People with autism or an autism spectrum disorder (ASD) typically show an impaired ability to recognize other people's minds. Under the DSM-5, **autism** is characterized by persistent deficits in social communication and interaction across multiple contexts, as well as restricted, repetitive patterns of behavior, interests, or activities. These deficits are present in early childhood, typically before age three, and lead to clinically significant functional impairment. Symptoms may include lack of social or emotional reciprocity, stereotyped and repetitive use of language or idiosyncratic language, and persistent preoccupation with unusual objects.

About half of parents of children with ASD notice their child's unusual behaviors by age 18 months, and about four-fifths notice by age 24 months, but often a diagnoses comes later, and individual cases vary significantly. Typical early signs of autism include:

- No babbling by 12 months.
- No gesturing (pointing, waving, etc.) by 12 months.
- No single words by 16 months.
- No two-word (spontaneous, not just echolalic) phrases by 24 months.
- Loss of any language or social skills, at any age.

Children with ASD experience difficulties with explaining and predicting other people's behavior, which leads to problems in social

communication and interaction. Children who are diagnosed with an autistic spectrum disorder usually develop the theory of mind more slowly than other children and continue to have difficulties with it throughout their lives.

For testing whether someone lacks the theory of mind, the *Sally-Anne* test is performed. The child sees the following story: Sally and Anne are playing. Sally puts her ball into a basket and leaves the room. While Sally is gone, Anne moves the ball from the basket to the box. Now Sally returns. The question is: where will Sally look for her ball? The test is passed if the child correctly assumes that Sally will look in the basket. The test is failed if the child thinks that Sally will look in the box. Children younger than four and older children with autism will generally say that Sally will look in the box.

Watch It

Video 9. *Sally Anne Test* demonstrates a false belief test, but this time with an autistic child. Notice the response of this child compared to the children in video 8.



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Concrete Operational Stage



As children continue into elementary school, they become able to represent ideas and events more flexibly and logically. Their rules of thinking still seem very basic by adult standards and usually operate unconsciously, but they allow children to solve problems more systematically than before, and therefore to be successful with many academic tasks. In the concrete operational stage, for example, a child may unconsciously follow the rule: "If nothing is added or taken away, then the amount of something stays the same." This simple principle helps children to understand certain arithmetic tasks, such as in adding or subtracting zero from a number, as well as to do certain classroom science experiments, such as ones involving judgments of the amounts of liquids when mixed. Piaget called this period the **concrete operational stage** because children mentally "operate" on concrete objects and events. The word concrete refers to that which is tangible; that which can be seen or touched or experienced directly. The concrete operational child is able to make use of logical principles in solving problems involving the physical world. For

example, the child can understand the principles of cause and effect, size, and distance.

Concrete operational thinking differs from preoperational thinking in two ways, each of which renders children more skilled as students. One difference is **reversibility**, or the ability to think about the steps of a process in any order. Water can be frozen and then thawed to become liquid again. But eggs cannot be unscrambled. Arithmetic operations are reversible as well: 2 + 3 = 5 and 5 − 3 = 2. Many of these cognitive skills are incorporated into the school's curriculum through mathematical problems and in worksheets about which situations are reversible or irreversible. Imagine a simple science experiment, for example, such as one that explores why objects sink or float by having a child place an assortment of objects in a basin of water. Both the preoperational and concrete operational child can recall and describe the steps in this experiment, but only the concrete operational child can recall them *in any order*. This skill is beneficial for any task involving multiple steps—a common feature of tasks in the classroom. In teaching new vocabulary from a story, for another example, a teacher might tell students: "First make a list of words in the story that you do not know, then find and write down their definitions, and finally get a friend to test you on your list." These directions involve repeatedly remembering to move back and forth between a second step and a first—a task that concrete operational students—and most adults—find easy, but that preoperational children often forget to do or find confusing. If the younger children are to do this task reliably, they may need external prompts, such as having the teacher remind them periodically to go back to the story to look for more unknown words

The other new feature of thinking during the concrete operational stage is the child's ability to **decenter** or focus on more than one feature of a problem at a time. There are hints of decentration in preschool children's dramatic play, which requires being aware on two levels at once—knowing that a banana can be both a banana and a "telephone." The decentration of the concrete operational stage

is more deliberate and conscious than preschoolers' make-believe. Now the child can attend to two things at once quite purposely. Suppose you give students a sheet with an assortment of subtraction problems on it and ask them to do this: "Find all of the problems that involve two-digit subtraction *and* that involve borrowing from the next column. Circle and solve *only* those problems." Following these instructions is quite possible for a concrete operational student (as long as they have been listening!) because the student can attend to the two subtasks simultaneously—finding the two-digit problems *and* identifying which involve borrowing.

As children's experiences and vocabularies grow, they build schema and are able to classify objects in many different ways. **Classification** can include new ways of arranging information, categorizing information, or creating classes of information. Many psychological theorists, including Piaget, believe that classification involves a hierarchical structure, such that information is organized from very broad categories to very specific items.

Classification



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In real classroom tasks, reversibility and decentration often happen

together. A well-known example of joint presence is Piaget's experiments with **conservation**, the belief that an amount or quantity stays the same even if it changes apparent size or shape (Piaget, 2001; Matthews, 1998). Imagine two identical balls made of clay. Any child, whether preoperational or concrete operational, will agree that the two indeed have the same amount of clay in them simply because they look the same. However, if you now squish one ball into a long, thin "hot dog," the preoperational child is likely to say that the amount of that ball has changed—either because it is longer or because it is thinner, but at any rate, because it now looks different. The concrete operational child will not make this mistake, thanks to new cognitive skills of reversibility and decentration. For this child, the amount is the same because "you could squish it back into a ball again" (reversibility) and because "it may be longer, but it is also thinner" (decentration). Piaget would say the concrete operational child "has conservation of quantity."

The classroom examples described above also involve reversibility and decentration. As already mentioned, the vocabulary activity described earlier requires reversibility (going back and forth between identifying words and looking up their meanings). However, it can also be construed as an example of decentration. Furthermore, as mentioned, the arithmetic activity requires decentration (looking for problems that meet two criteria *and* also solving them). However, it can also be construed as an example of reversibility (going back and forth between subtasks, as with the vocabulary activity). Either way, the development of concrete operational skills support students in doing many basic academic tasks; in a sense, they make ordinary schoolwork possible.



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Formal Operational Stage



In the fourth (and last) of the Piagetian stages, an adolescent becomes able to reason not only about tangible objects and events, as younger children do, but also about hypothetical or abstract ones. Hence this stage is named the **formal operational** stage—the period when the individual can "operate" on "forms" or representations.

During the formal operational stage, adolescents can understand **abstract principles** that have no physical reference. They can now contemplate such abstract constructs as beauty, love, freedom, and morality. The adolescent is no longer limited by what can be directly seen or heard. Additionally, while younger children solve problems through trial and error, adolescents demonstrate **hypothetical-deductive reasoning**, which is developing hypotheses based on what might logically occur. They can think about all the possibilities in a situation beforehand, and then test them systematically (Crain, 2005). Now they can engage in real scientific thinking. Formal operational thinking also involves accepting hypothetical situations. Adolescents understand the concept of **transitivity**, which means that a relationship between two elements is carried over to other elements logically related to the first two, such as if A<B and B<C, then A<C (Thomas, 1979). For example, when asked: If Maria is shorter than Alicia and Alicia is shorter than Caitlyn, who is the

shortest? Adolescents can answer the question correctly as they understand the transitivity involved.



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Video 10. *Formal Operational Stage* explains some of the cognitive development consistent with formal operational thought.

Abstract and Hypothetical Thinking

One of the major premises of formal operational thought is the capacity to think of possibility, not just reality. Adolescents' thinking is less bound to concrete events than that of children; they can contemplate possibilities outside the realm of what currently exists. One manifestation of the adolescent's increased facility with thinking about possibilities is the improvement of skill in **deductive reasoning (also called top-down reasoning),** which leads to the development of **hypothetical thinking**. This development provides the ability to plan ahead, see the future consequences of an action, and provide alternative explanations of events. It also makes adolescents more skilled debaters, as they can reason against a friend's or parent's assumptions. Adolescents also develop a more sophisticated understanding of probability.

This appearance of more systematic, abstract thinking allows adolescents to comprehend the sorts of higher-order abstract logic inherent in puns, proverbs, metaphors, and analogies. Their increased facility permits them to appreciate how language can

be used to convey multiple messages, such as satire, metaphor, and sarcasm (children younger than age nine often cannot comprehend sarcasm). This development also permits the application of advanced reasoning and logical processes to social and ideological matters such as interpersonal relationships, politics, philosophy, religion, morality, friendship, faith, fairness, and honesty.

Deductive Reasoning

Video 11. *Deductive Reasoning* demonstrates a Piagetian task that presents the child with a hypothetical situation and asks that they deduce what happens given this scenario. The first child is an elementary school-aged child. The second is an adolescent. You can see how these two manage hypothetical information differently to make predictions about what will happen next.

https://youtu.be/YJyuy4B2aKU

Intuitive and Analytic Thinking

Piaget emphasized the sequence of thought throughout four stages. Others suggest that thinking does not develop in sequence, but instead, that advanced logic in adolescence may be influenced by intuition. Cognitive psychologists often refer to intuitive and analytic thought as the **dual-process model**, the notion that humans have two distinct networks for processing information (Kuhn, 2013.) **Intuitive thought** is automatic, unconscious, and fast, and it is more experiential and emotional.

In contrast, **analytic thought** is deliberate, conscious, and rational (logical). While these systems interact, they are distinct (Kuhn, 2013). Intuitive thought is easier, quicker, and more commonly used in everyday life. As discussed in the adolescent brain development section, the discrepancy between the maturation of the limbic system and the prefrontal cortex may make teens more prone to emotional, intuitive thinking than adults. As adolescents develop, they gain in logic/analytic thinking ability and sometimes regress, with social context, education, and experiences becoming significant influences. Simply put, being "smarter," as measured by an intelligence test, does not advance cognition as much as having more experience, in school and life (Klaczynski & Felmban, 2014).

Relativistic Thinking

Adolescents are more likely to engage in **relativistic thinking**—in other words, they are more likely to question others' assertions and less likely to accept information as absolute truth. Through experience outside the family circle, they learn that rules they were taught as absolute are relativistic. They begin to differentiate between rules crafted from common sense (do not touch a hot stove) and those that are based on culturally relative standards (codes of etiquette). This can lead to a period of questioning authority in all domains.

Formal Operational Thinking In the Classroom

School is a main contributor in guiding students towards formal operational thought. With students at this level, the

teacher can pose hypothetical (or contrary-to-fact) problems: "What if the world had never discovered oil?" or "What if the first European explorers had settled first in California instead of on the East Coast of the United States?" To answer such questions, students must use hypothetical reasoning, meaning that they must manipulate ideas that vary in several ways at once and do so entirely in their minds.

The hypothetical reasoning that concerned Piaget primarily involved scientific problems. His studies of formal operational thinking therefore often look like problems that middle or high school teachers pose in science classes. In one problem, for example, a young person is presented with a simple pendulum, to which different amounts of weight can be hung (Inhelder & Piaget, 1958). The experimenter asks: "What determines how fast the pendulum swings: the length of the string holding it, the weight attached to it, or the distance that it is pulled to the side?" The young person is not allowed to solve this problem by trial-and-error with the materials themselves but must reason a way to the solution mentally. To do so systematically, he or she must imagine varying each factor separately, while also imagining the other factors that are held constant. This kind of thinking requires facility at manipulating mental representations of the relevant objects and actions—precisely the skill that defines formal operations.

As you might suspect, students with an ability to think hypothetically have an advantage in many kinds of schoolwork: by definition, they require relatively few "props" to solve problems. In this sense, they can in principle be more self-directed than students who rely only

on concrete operations—certainly a desirable quality in the opinion of most teachers. Note, though, that formal operational thinking is desirable but not sufficient for school success, and that it is far from being the only way that students achieve educational success. Formal thinking skills do not ensure that a student is motivated or well-behaved, for example, nor does it guarantee other desirable skills. The fourth stage in Piaget's theory is really about a particular kind of formal thinking, the kind needed to solve scientific problems and devise scientific experiments. Since many people do not normally deal with such problems in the normal course of their lives, it should be no surprise that research finds that many people never achieve or use formal thinking fully or consistently, or that they use it only in selected areas with which they are very familiar (Case & Okomato, 1996). For teachers, the limitations of Piaget's ideas suggest a need for additional theories about development—ones that focus more directly on the social and interpersonal issues of childhood and adolescence.

Adolescent Egocentrism



Once adolescents can understand abstract thoughts, they enter a world of hypothetical possibilities and demonstrate **egocentrism** or a heightened self-focus. The egocentricity comes from attributing unlimited power to their own thoughts (Crain, 2005). Piaget believed it was not until

adolescents took on adult roles that they would be able to learn the limits to their own thoughts.

David Elkind (1967) expanded on the concept of Piaget's adolescent egocentricity. Elkind theorized that the physiological changes that occur during adolescence result in adolescents being primarily concerned with themselves. Additionally, since adolescents fail to differentiate between what others are thinking and their own thoughts, they believe that others are just as fascinated with their behavior and appearance. This belief results in the adolescent anticipating the reactions of others, and consequently constructing an imaginary audience. "The **imaginary audience** is the adolescent's belief that those around them are as concerned and focused on their appearance as they themselves are" (Schwartz, Maynard, & Uzelac, 2008, p. 441). Elkind thought that the imaginary audience contributed to the self-consciousness that occurs during early adolescence. The desire for privacy and reluctance to share personal information may be a further reaction to feeling under constant observation by others.

Another important consequence of adolescent egocentrism is the **personal fable** or belief that one is unique, special, and invulnerable to harm. Elkind (1967) explains that because adolescents feel so important to others (imaginary audience), they regard themselves and their feelings as being special and unique. Adolescents believe that only they have experienced strong and diverse emotions, and therefore others could never understand how they feel. This uniqueness in one's emotional experiences reinforces the adolescent's belief of invulnerability, especially to death. Adolescents will engage in risky behaviors, such as drinking and driving or unprotected sex, and feel they will not suffer any negative consequences. Elkind believed that adolescent egocentricity emerges in early adolescence and declines in middle adolescence. However, recent research has also identified egocentricity in late adolescence (Schwartz et al., 2008).



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Consequences of Formal Operational Thought

As adolescents are now able to think abstractly and hypothetically, they exhibit many new ways of reflecting on information (Dolgin, 2011). For example, they demonstrate greater **introspection** or thinking about one's thoughts and feelings. They begin to imagine how the world could be, which leads them to become **idealistic** or to insist upon high standards of behavior. Because of their idealism, they may become critical of others, especially adults in their life. Additionally, adolescents can demonstrate **hypocrisy**, or pretend to be what they are not. Since they can recognize what others expect of them, they will conform to those expectations for their emotions and behavior seemingly hypocritical to themselves. Lastly, adolescents can exhibit **pseudostupidity.** This is when they approach problems at a level that is too complex and they fail

because the tasks are too simple. Their new ability to consider alternatives is not completely under control and they appear "stupid" when they are, in fact, bright, just not experienced.

Criticisms of Piaget's Theories

Researchers during the 1960's and 1970's identified shortcomings in Piaget's theory. First, critics argue that by describing tasks with confusing abstract terms and using overly difficult tasks, Piaget underestimated children's abilities. Researchers have found that young children can succeed on simpler forms of tasks requiring the same skills. Second, Piaget's theory predicts that thinking within a particular stage would be similar across tasks. In other words, preschool children should perform at the preoperational level in all cognitive tasks. Research has shown diversity in children's thinking across cognitive tasks. Third, according to Piaget, efforts to teach children developmentally advanced concepts would be unsuccessful. Researchers have found that in some instances, children often learn more advanced concepts with relatively brief instruction. Researchers now believe that children may be more competent than Piaget originally thought, especially in their practical knowledge.

Beyond Formal Operational Thought: Postformal Thought

According to Piaget's theory, adolescents acquire formal operational thought and this is the last stage of cognitive development. The hallmark of this type of thinking is the ability to think abstractly or to consider possibilities and ideas about circumstances never

directly experienced. Thinking abstractly is only one characteristic of adult thought, however. If you compare a 15-year-old with someone in their late 30s, you would probably find that the latter considers not only what is possible but also what is likely. Why the change? The adult has gained experience and understands why possibilities do not always become realities. They learn to base decisions on what is realistic and practical, not idealistic, and can make adaptive choices. Adults are also not as influenced by what others think. This advanced type of thinking is referred to as **postformal thought** (Sinnott, 1998).

In addition to moving toward more practical considerations, thinking in early adulthood may also become more flexible and balanced. Abstract ideas that the adolescent believes in firmly may become standards by which the adult evaluates reality. Adolescents tend to think in **dichotomies**; ideas are true or false; good or bad; there is no middle ground. However, with experience, the adult comes to recognize that there are some right and some wrong in each position, some good or some bad in a policy or approach, some truth and some falsity in a particular idea. This ability to bring together salient aspects of two opposing viewpoints or positions is referred to as **dialectical thought** and is considered one of the most advanced aspects of postformal thinking (Basseches, 1984). Such thinking is more realistic because very few positions, ideas, situations, or people are completely right or wrong. So, for example, parents who were considered angels or devils by the adolescent eventually become just people with strengths and weaknesses, endearing qualities, and faults to the adult.



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Video 12. *Perry's Stages of Intellectual Development* explains post-formal stages of cognitive development in adulthood.

Does Everyone Reach Formal Operational or Postformal Thought?

Formal operational thought is influenced by experience and education. Most people attain some degree of formal operational thinking but use formal operations primarily in the areas of their strongest interest (Crain, 2005). Even those that can use formal or postformal thought, they do not regularly demonstrate it. In some small villages and tribal communities, it is barely used at all. A possible explanation is that an individual's thinking has not been sufficiently challenged to demonstrate formal operational thought in all areas.

Some adults lead lives in which they are not challenged to think abstractly about their world. Many adults do not receive any formal education and are not taught to think abstractly about situations they have never experienced. Further, they are also not exposed to conceptual tools used to formally analyze hypothetical situations. Those who do think abstractly, in fact, may be able to do so more easily in some subjects than others. For example, psychology majors may be able to think abstractly about psychology, but be unable to use abstract reasoning in physics or chemistry. Abstract reasoning in a particular field requires a knowledge base that we might not have in all areas. Consequently, our ability to think abstractly depends to a large extent on our experiences.

Social Constructivism



Lev Vygotsky (1896-1934) was a Russian psychologist whose **sociocultural theory** emphasizes the importance of culture and interaction in the development of cognitive abilities. Vygotsky differed with Piaget in that he believed that a person has not only a set of abilities but also a set of potential abilities that can be realized if given the proper guidance from others. Vygotsky developed theories on teaching that have been adopted by educators today.

Like Piaget, Vygotsky acknowledged intrinsic development, but he argued that it is the language, writings, and concepts arising from the culture that elicit the highest level of cognitive thinking (Crain, 2005). He believed that social interactions with teachers and more learned peers could facilitate a learner's potential for learning. Without this interpersonal instruction, he believed learner's minds would not advance very far as their knowledge would be based only on their own discoveries.

Figure 1. Lev Vygotsky

Zone of Proximal Development and Scaffolding

Vygotsky's best-known concept is the **Zone of Proximal Development (ZPD). The** ZPD has been defined as "the distance

between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem-solving under adult guidance, or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). Vygotsky stated that learners should be taught in the ZPD. A good teacher or more-knowledgable-other (MKO) identifies a learner's ZPD and helps them stretch beyond it. Then the MKO gradually withdraws support until the learner can perform the task unaided. Other psychologists have applied the metaphor of scaffolds (the temporary platforms on which construction workers stand) to Vygotsky's theory. Scaffolding is the temporary support that a MKO gives a learner to do a task.

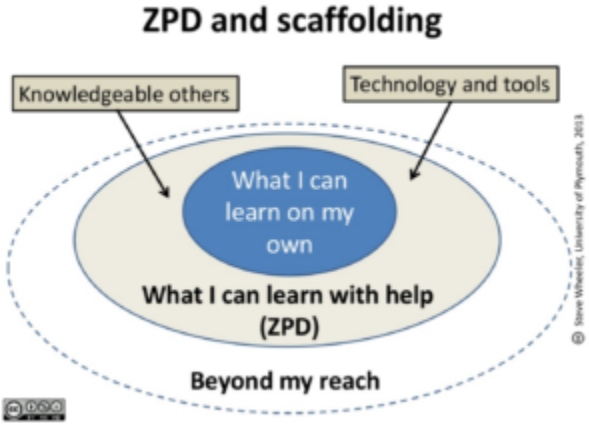


Figure 2. Model of Vygotsky's zone of proximal development.

Thought and Speech

Do you ever talk to yourself? Why? Chances are, this occurs when you are struggling with a problem, trying to remember something,

or feel very emotional about a situation. Children talk to themselves too. Piaget interpreted this as **egocentric speech** or a practice engaged in because of a child's inability to see things from another's point of view. Vygotsky, however, believed that children talk to themselves in order to solve problems or clarify thoughts. As children learn to think in words, they do so aloud, referred to as **private speech**, speech meant only for one's self. Eventually, thinking out loud becomes thought accompanied by internal speech, and talking to oneself becomes a practice only engaged in when we are trying to learn something or remember something. This inner speech is not as elaborate as the speech we use when communicating with others (Vygotsky, 1962).

Vygotsky's Influence on Education

Video 1. *Vygotsky's Developmental Theory* introduces the applications of the theory in the classroom. Vygotsky's theories have been extremely influential for education. Although Vygotsky himself never mentioned the term scaffolding, it is often credited to him as a continuation of his ideas pertaining to the way adults or other children can use guidance in order for a child to work within their ZPD. (The term scaffolding was first developed by Jerome Bruner, David Wood, and Gail Ross while applying Vygotsky's concept of ZPD to various educational contexts.)

Educators often apply these concepts by assigning tasks that students cannot do on their own, but which they can do with assistance; they should provide just enough assistance so that students learn to complete the tasks independently and then provide an environment that enables students to do harder tasks than would otherwise

be possible. Teachers can also allow students with more knowledge to assist students who need more guidance. Especially in the context of collaborative learning, group members who have higher levels of understanding can help the less advanced members learn within their zone of proximal development.



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Contrasting Paget and Vygotsky

Piaget was highly critical of teacher-directed instruction believing that teachers who take control of the child's learning place the child into a passive role (Crain, 2005). Further, teachers may present abstract ideas without the child's true understanding, and instead, they just repeat back what they heard. Piaget believed children must be given opportunities to discover concepts on their own. As previously stated, Vygotsky did not believe children could reach a higher cognitive level without instruction from more learned individuals. Who is correct? Both theories certainly contribute to our understanding of how children learn.

Information Processing Theory

Information Processing is not the work of a single theorist, but based on the ideas and research of several cognitive scientists studying how individuals perceive, analyze, manipulate, use, and remember information. This approach assumes that humans gradually improve in their processing skills; that is, development is continuous rather than stage-like. The more complex mental skills of adults are built from the primitive abilities of children. We are born with the ability to notice stimuli, store, and retrieve information. Brain maturation enables advancements in our information processing system. At the same time, interactions with the environment also aid in our development of more effective strategies for processing information.

Improvements in basic thinking abilities generally occur in five areas during adolescence:

- *Attention*. Improvements are seen in **selective attention**(the process by which one focuses on one stimulus while tuning out another), as well as **divided attention** (the ability to pay attention to two or more stimuli at the same time).
- *Memory*. Improvements are seen in working memory and long-term memory.
- *Processing Speed.* Adolescents think more quickly than children. Processing speed improves sharply between age five and middle adolescence, levels off around age 15, and does not appear to change between late adolescence and adulthood.
- *Organization of Thinking*. Adolescents are more planful, they approach problems with strategy, and are flexible in using different strategies in different situations.
- *Metacognition*. Adolescents can think about thinking itself. This

often involves monitoring one's own cognitive activity during the thinking process. **Metacognition**provides the ability to plan ahead, see the future consequences of an action, and provide alternative explanations of events.

Attention

Changes in attention have been described by many as the key to changes in human memory (Nelson & Fivush, 2004; Posner & Rothbart, 2007). However, attention is not a unified function; it is comprised of sub-processes. O*ur ability to focus on a single task or stimulus, while ignoring distracting information*, called **selective attention**. There is a sharp improvement in selective attention from age six into adolescence (Vakil, Blachstein, Sheinman, & Greenstein, 2009). S**ustained attention** is *the ability to stay on task for long periods of time. The ability to switch our focus between tasks or external stimuli* is called **divided attention** or **multitasking, which** also improves into adolescence (Carlson, Zelazo, & Faja, 2013).

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Video 1. *Attention* explains the ways in which we may attend or fail to attend to stimuli.

Selective Attention

The ability with selective attention tasks improves through childhood and into adolescence. While children's selective attention may be inconsistent during middle childhood, adolescents demonstrate the ability to reliably select and prioritize stimuli for attention. The development of this ability is influenced by the child's temperament (Rothbart & Rueda, 2005), the complexity of the stimulus or task (Porporino, Shore, Iarocci & Burack, 2004), and may be dependent on whether the stimuli are visual or auditory (Guy, Rogers & Cornish, 2013). Guy et al. (2013) found that children's ability to selectively attend to visual information outpaced that of auditory stimuli. This may explain why young children are not able to hear the voice of the teacher over the cacophony of sounds in the typical preschool classroom (Jones, Moore & Amitay, 2015). Jones and his colleagues found that 4 to 7 year-olds could not filter out background noise, especially when its frequencies were close in sound to the target sound. In comparison, teens often performed similarly to adults.



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Video 2. *Theories of Selective Attention* explains how and why we attend to some stimuli and not others.

Sustained Attention

Most measures of sustained attention typically ask individuals to spend several minutes focusing on one task, while waiting for an infrequent event, while there are multiple distractors for several minutes. Common estimates of the attention span of healthy teenagers and adults range from 10 to 20 minutes. There is some debate as to whether attention is consistently sustained or whether people repeatedly choose to re-focus on the same thing (Raichle, 1999) This ability to renew attention permits people to 'pay attention' to things that last for more than a few minutes.

For time-on-task measurements, the type of activity used in the test affects the results, as people are generally capable of a longer attention span when they are doing something that they find enjoyable or intrinsically motivating (Raichle,1999) Attention is also increased if the person is able to perform the task fluently, compared to a person who has difficulty performing the task, or to the same person when he or she is just learning the task. Fatigue, hunger, noise, and emotional stress reduce the time focused on the task. After losing attention from a topic, a person may restore it by resting, doing a different kind of activity, changing mental focus, or deliberately choosing to re-focus on the first topic.

Divided Attention

Divided attention can be thought of in a couple of ways. We may look at how well people are able to multitask, performing two or more tasks simultaneously, or how people are able to alternate attention between two or more tasks. For example, walking and talking to a friend at the same time is multitasking, where trying to text while driving requires us to quickly alternate attention between two tasks.

Young children (age 3-4) have considerable difficulties in dividing their attention between two tasks, and often perform at levels equivalent to our closest relative, the chimpanzee, but by age five they have surpassed the chimp (Hermann, Misch, Hernandez-Lloreda & Tomasello, 2015; Hermann & Tomasello, 2015). Despite these improvements, 5-year-olds continue to perform below the level of school-age children, adolescents, and adults. These skills continue to develop into adolescence.

Regardless of age, we have a limited capacity for attention and the division of attention is confined to that limitation. Our ability to effectively multitask or alternate attention is dependent on the automaticity or complexity of the task, but are also influenced by conditions like anxiety, arousal, task difficulty, and skills (Sternberg & Sternberg, 2012). Research shows that when dividing attention, people are more apt to make mistakes or perform their tasks more slowly (Matlin, 2013). Attention must be divided among all of the component tasks to perform them.

Classical research on divided attention involved people performing simultaneous tasks, like reading stories while listening and writing something else, or listening to two separate messages through different ears. Subjects were often tested on their ability to learn new information while engaged in multiple tasks. More current research examines the performance of doing two tasks simultaneously (Matlin, 2013), such as driving while performing another task. This research reveals that the human attentional system has limits for what it can process. For examples, driving performance is worse while engaged in other tasks; drivers make more mistakes, brake harder and later, get into more accidents, veer into other lanes, and/or are less aware of their surroundings when engaged in the previously discussed tasks (Collet et al., 2009; Salvucci & Taatgen, 2008; Strayer & Drews, 2007).



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Video 3. *The Spotlight Model of Attention and Our Ability to Multitask* explains how we divide our attention to attend to different tasks or information.

Memory

Memory is central to cognitive development. Our memories form the basis for our sense of self, guide our thoughts and decisions, influence our emotional reactions, and allow us to learn (Bauer, 2008)[1].

It is thought that Piaget underestimated memory ability in infants (Schneider, 2015)[2].

1. Bauer PJ, Pathman T. Memory and Early Brain Development. In: Tremblay RE, Boivin M, Peters RDeV, eds. Paus T, topic ed. Encyclopedia on Early Childhood Development [online]. http://www.child-encyclopedia.com/brain/according-experts/memory-and-early-brain-development. Published December 2008. Accessed March 2, 2019.
2. Schneider, Wolfgang. (2015). This belief came in part from findings that adults rarely recall personal events from before the age of 3

As mentioned when discussing the development of infant senses, within the first few weeks of birth, infants recognize their caregivers by face, voice, and smell. Sensory and caregiver memories are apparent in the first month, motor memories by 3 months, and then, at about 9 months, more complex memories including language (Mullally & Maguire, 2014)[3]. There is agreement that memory is fragile in the first months of life, but that improves with age. Repeated sensations and brain maturation are required in order to process and recall events (Bauer, 2008). Infants remember things that happened weeks and months ago (Mullally & Maguire, 2014), although they most likely will not remember it decades later. From the cognitive perspective, this has been explained by the idea that the lack of linguistic skills of babies and toddlers limit their ability to mentally represent events; thereby, reducing their ability to encode memory. Moreover, even if infants do form such early memories, older children and adults may not be able to access them because they may be employing very different, more linguistically based, retrieval cues than infants used when forming the memory.

years (a phenomenon known as **infantile** or **childhood amnesia**). However, research with infants and young children has made it clear that they can and do form memories of events. Memory development from early childhood through emerging adulthood. Switzerland: Spring International. doi: 10.1007/978-3-319-09611-7.

3. Mullally, Sinead L. & Maguire, Eleanor. A. (2014). Learning to remember: The early ontogeny of episodic memory. Developmental Cognitive Neuroscience, 9(13), 12-29. doi: 10.1016/j.dcn.2013.12.006

Watch It

Watch this Ted talk from Alison Gopnik to hear about more research done on cognition in babies.

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Memory is an information processing system; therefore, we often compare it to a computer. **Memory** is the set of processes used to encode, store, and retrieve information over different periods of time.



Figure 1. Encoding involves the input of information into the memory system. Storage is the retention of encoded information.

Retrieval, or getting the information out of memory and back into awareness, is the third function.

Encoding

We get information into our brains through a process called **encoding**, which is the input of information into the memory system. Once we receive sensory information from the environment, our brains label or code it. We organize the information with other similar information and connect new concepts to existing concepts. Encoding information occurs through automatic processing and effortful processing.

If someone asks you what you ate for lunch today, more than likely, you could recall this information quite easily. This is known as **automatic processing**, or the encoding of details like time, space, frequency, and the meaning of words. Automatic processing is usually done without any conscious awareness. Recalling the last time you studied for a test is another example of automatic processing. But what about the actual test material you studied? It probably required a lot of work and attention on your part in order to encode that information. This is known as **effortful processing**.

There are three types of encoding. The encoding of words and their meaning is known as **semantic encoding**. It was first demonstrated by William Bousfield (1935) in an experiment in which he asked people to memorize words. The 60 words were actually divided into 4 categories of meaning, although the participants did not know this because the words were randomly presented. When they were asked to remember the words, they tended to recall them in categories, showing that they paid attention to the meanings of the words as they learned them.

Visual encoding is the encoding of images, and **acoustic encoding** is the encoding of sounds, words in particular. To see how visual encoding works, read over this list of words: *car*, *level*,

dog, *truth*, *book*, *value*. If you were asked later to recall the words from this list, which ones do you think you'd most likely remember? You would probably have an easier time recalling the words *car*, *dog*, and *book*, and a more difficult time recalling the words *level*, *truth*, and *value*. Why is this? Because you can recall images (mental pictures) more easily than words alone. When you read the words *car*, *dog*, and *book*, you created images of these things in your mind. These are concrete, high-imagery words. On the other hand, abstract words like *level*, *truth*, and *value* are low-imagery words. High-imagery words are encoded both visually and semantically (Paivio, 1986), thus building a stronger memory.

Now let's turn our attention to acoustic encoding. You are driving in your car, and a song comes on the radio that you haven't heard in at least 10 years, but you sing along, recalling every word. In the United States, children often learn the alphabet through song, and they learn the number of days in each month through rhyme: "Thirty days hath September, / April, June, and November; / All the rest have thirty-one, / Save February, with twenty-eight days clear, / And twenty-nine each leap year." These lessons are easy to remember because of acoustic encoding. We encode the sounds the words make. This is one of the reasons why much of what we teach young children is done through song, rhyme, and rhythm.

Which of the three types of encoding do you think would give you the best memory of verbal information? Some years ago, psychologists Fergus Craik and Endel Tulving (1975) conducted a series of experiments to find out. Participants were given words along with questions about them. The questions required the participants to process the words at one of the three levels. The visual processing questions included such things as asking the participants about the font of the letters. The acoustic processing questions asked the participants about the sound or rhyming of the words, and the semantic processing questions asked the participants about the meaning of the words. After participants

were presented with the words and questions, they were given an unexpected recall or recognition task.

Words that had been encoded semantically were better remembered than those encoded visually or acoustically. Semantic encoding involves a deeper level of processing than shallower visual or acoustic encoding. Craik and Tulving concluded that we process verbal information best through semantic encoding, especially if we apply what is called the self-reference effect. The **self-reference effect** is the tendency for an individual to have a better memory for information that relates to oneself in comparison to material that has less personal relevance (Rogers, Kuiper & Kirker, 1977). Could semantic encoding be beneficial to you as you attempt to memorize the concepts in this chapter?



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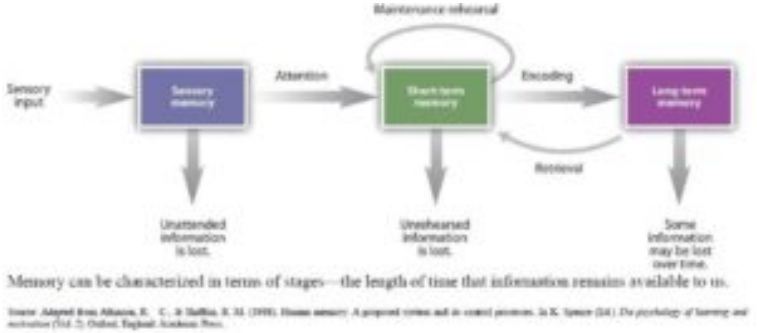
Video 4. *Encoding Strategies* discusses various encoding techniques that help us store information in memory.

Storage

Once the information has been encoded, we have to somehow retain it. Our brains take the encoded information and place it in storage. **Storage** is the creation of a permanent record of information.

In order for a memory to go into storage (i.e., long-term memory),

it has to pass through three distinct stages: Sensory Memory, Short-Term Memory, and finally, Long-Term Memory. These stages were first proposed by Richard Atkinson and Richard Shiffrin (1968). Their model of human memory (Figure 6.5.2), called Atkinson-Shiffrin (A-S) or three-box model, is based on the belief that we process memories in the same way that a computer processes information.



Memory can be characterized in terms of stages—the length of time that information remains available to us.

Figure 2. According to the Atkinson-Shiffrin model of memory, information passes through three distinct stages in order for it to be stored in long-term memory.

But three-box is just one model of memory. Others, such as Baddeley and Hitch (1974), have proposed a model where short-term memory itself has different forms. In this model, storing memories in short-term memory is like opening different files on a computer and adding information. The type of short-term memory (or computer file) depends on the type of information received. There are memories in visual-spatial form, as well as memories of spoken or written material, and they are stored in three short-term systems: a visuospatial sketchpad, an episodic buffer, and a phonological loop. According to Baddeley and Hitch, a central executive part of memory supervises or controls the flow of information to and from the three short-term systems.

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Video 5. *Information Processing Model: Sensory, Working, and Long Term Memory* explains the three-box model of memory.

Sensory Memory

In the Atkinson-Shiffrin model, stimuli from the environment are processed first in **sensory memory**: storage of brief sensory events, such as sights, sounds, and tastes. It is very brief storage, *essentially long enough for the brain to register and start processing the information.* Sensory memory can hold visual information for about half of a second and auditory information for a few seconds. Unlike other cognitive processes, it seems that sensory memory does not change from infancy (Siegler, 1998), but without the ability to encode the information, it fades from sensory memory quickly (Papalia et al., 2008). As children and adolescence become more capable of encoding, they can take more advantage of the information available to them in the sensory memory.

We are constantly bombarded with sensory information. We cannot absorb all of it, or even most of it. And most of it has no impact on our lives. For example, what was your professor wearing the last class period? As long as the professor was dressed appropriately, it does not really matter what she was wearing. Sensory information about sights, sounds, smells, and even textures, which we do not view as valuable information, we discard.

If we view something as valuable, the information will move into our short-term memory system.

One study of sensory memory researched the significance of valuable information on short-term memory storage. J. R. Stroop discovered a memory phenomenon in the 1930s: you will name a color more easily if it appears printed in that color, which is called the Stroop effect. In other words, the word "red" will be named more quickly, regardless of the color the word appears in, than any word that is colored red. Try an experiment: name the colors of the words you are given in Figure 6.5.3 Do not read the words, but say the color the word is printed in. For example, upon seeing the word "yellow" in green print, you should say "green," not "yellow." This experiment is fun, but it's not as easy as it seems.



Figure 3. The Stroop effect describes why it is difficult for us to name a color when the word and the color of the word are different.

Short-Term (Working) Memory

Short-term memory (STM), also called **working memory**, is a temporary storage system that processes incoming sensory memory. Short-term memory is the bridge between information taken in through sensory memory and the more permanent storage of information in long-term memory. Information that is not moved along from short-term memory to long-term memory will be forgotten. Short-term memory is also called working memory because this is the system where the "work" of memory happens. If you are retrieving information from your long-term memory, you are moving it into your working memory, where you can think about that information.

Think of working memory as the information you have displayed on your computer screen—a document, a spreadsheet, or a web page. Then, the information in this memory system goes to long-term memory (you save it to your hard drive), or it is discarded (you delete a document or close a web browser). This step of **rehearsal**, the conscious repetition of information to be remembered, to move STM into long-term memory is called **memory consolidation**.

You may find yourself asking, "How much information can our memory handle at once?" To explore the capacity and duration of your short-term memory, have a partner read the strings of random numbers (Figure 6.5.4) out loud to you, beginning each string by saying, "Ready?" and ending each by saying, "Recall," at which point you should try to write down the string of numbers from memory.

9754	68259	913825	5316842	86951372	719384273
6419	67148	648327	5963827	51739826	163875942

Figure 4. Work through this series of numbers using the recall

exercise explained above to determine the longest string of digits that you can store.

Note the longest string at which you got the series correct. For most people, this will be close to 7. Recall is somewhat better for random numbers than for random letters (Jacobs, 1887), and also often slightly better for information we hear (acoustic encoding) rather than see (visual encoding) (Anderson, 1969).

Short-term or working memory often requires conscious effort and adequate use of attention to function effectively. As you read earlier, children struggle with many aspects of attention, and this greatly diminishes their ability to consciously juggle several pieces of information in memory. The capacity of working memory, that is the amount of information someone can hold in consciousness, is smaller in young children than in older children and adults. The typical 5-year-old can hold only a 4 digit number active. The typical adult and teenager can hold a 7 digit number active in their short-term memory. The capacity of working memory expands during middle and late childhood, and research has suggested that both an increase in processing speed and the ability to inhibit irrelevant information from entering memory are contributing to the greater efficiency of working memory during this age (de Ribaupierre, 2002). Changes in myelination and synaptic pruning in the cortex are likely behind the increase in processing speed and ability to filter out irrelevant stimuli (Kail, McBride-chang, Ferrer, Cho, & Shu, 2013).

Short-term memory can only hold information for a short period of time, without rehearsal. For a typical adolescent or adult, storage lasts about 20-30 seconds. Older children and adults use mental strategies to aid their memory performance. For instance, simple rote rehearsal may be used to commit information to memory. Young children often do not rehearse unless reminded to do so, and when they do rehearse, they often fail to use clustering rehearsal. In **clustering rehearsal,** *the person rehearses previous material while adding in additional information.* If a list of words is read out loud to you, you are likely to rehearse each word as you hear it along

with any previous words you were given. Young children will repeat each word they hear, but often fail to repeat the prior words in the list. In Schneider, Kron-Sperl, and Hunnerkopf's (2009) longitudinal study of 102 kindergarten children, the majority of children used no strategy to remember information, a finding that was consistent with previous research. As a result, their memory performance was poor when compared to their abilities as they aged and started to use more effective memory strategies.

Executive Functions

Changes in attention and the working memory system also involve changes in executive function. **Executive function (ef)** *refers to self-regulatory processes*, such as the ability to inhibit behavior or cognitive flexibility, *that enable adaptive responses to new situations or to reach a specific goal.* Executive function skills gradually emerge during early childhood and continue to develop throughout childhood and adolescence. Like many cognitive changes, brain maturation, especially the prefrontal cortex, along with experience, influence the development of executive function skills. A child, whose parents are more warm and responsive, use scaffolding when the child is trying to solve a problem, and who provide cognitively stimulating environments for the child show higher executive function skills (Fay-Stammbach, Hawes & Meredith, 2014). For instance, scaffolding was positively correlated with greater cognitive flexibility at age two and inhibitory control at age four (Bibok, Carpendale & Müller, 2009).

STM and Learning

Individuals differ in their memory abilities, and these differences predict academic performance (Prebler, Krajewski, & Hasselhorn,

2013). Children with learning disabilities in math and reading often have difficulties with working memory (Alloway, 2009). They may struggle with following the directions of an assignment. When a task calls for multiple steps, children with poor working memory may miss steps because they may lose track of where they are in the task. Adults working with such children may need to communicate: using more familiar vocabulary, using shorter sentences, repeating task instructions more frequently, and breaking more complex tasks into smaller, more manageable steps. Some studies have also shown that more intensive training of working memory strategies, such as chunking, aid in improving the capacity of working memory in children with poor working memory (Alloway, Bibile, & Lau, 2013).

Long-term Memory

Long-term memory (LTM) is the continuous storage of information. Unlike short-term memory, the storage capacity of LTM has no real limits. It encompasses all the things you can remember what happened more than just a few minutes ago to all of the things that you can remember what happened days, weeks, and years ago. In keeping with the computer analogy, the information in your LTM would be like the information you have saved on the hard drive. It isn't there on your desktop (your short-term memory), but you can pull up this information when you want it, at least most of the time. Not all long-term memories are strong memories. Some memories can only be recalled through prompts. For example, you might easily recall a fact— "What is the capital of the United States?"—or a procedure—"How do you ride a bike?"—but you might struggle to recall the name of the restaurant you had dinner when you were on vacation in France last summer. A prompt, such as that the restaurant was named after its owner, who spoke to you about your shared interest in soccer, may help you recall the name of the restaurant.

Long-term memory is divided into two types: explicit and implicit (Figure 6.5.5). Understanding the different types is important because a person's age or particular types of brain trauma or disorders can leave certain types of LTM intact while having disastrous consequences for other types. **Explicit memories,** also called **declarative memories,** are those we consciously try to remember and recall. For example, if you are studying for your chemistry exam, the material you are learning will be part of your explicit memory. (Note: Sometimes, but not always, the terms explicit memory and declarative memory are used interchangeably.)

Implicit memories, also called **non-declarative memories,** are memories that are not part of our consciousness. They are memories formed from behaviors. Implicit memory is also called non-declarative memory.

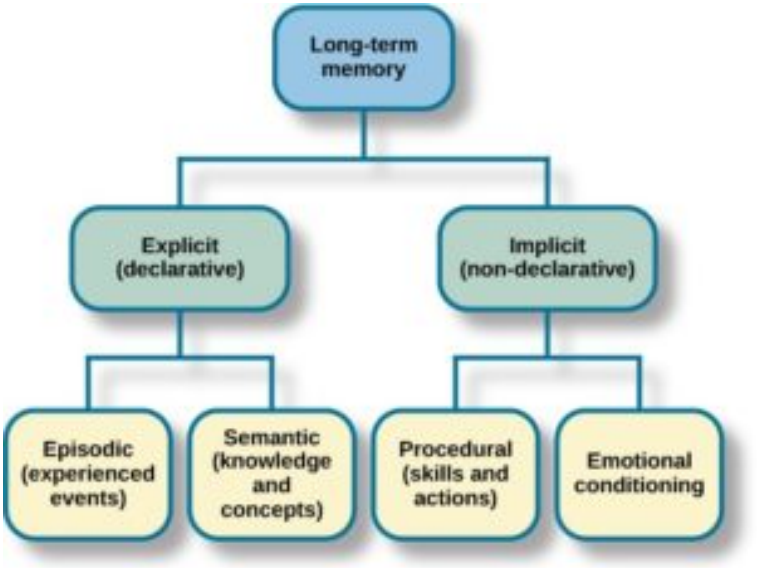


Figure 5. There are two components of long-term memory: explicit and implicit. Explicit memory includes episodic and

semantic memory. Implicit memory includes procedural memory and things learned through conditioning.

Procedural memory is a type of implicit memory: it stores information about how to do things. It is the memory for skilled actions, such as how to brush your teeth, how to drive a car, how to swim the crawl (freestyle) stroke. If you are learning how to swim freestyle, you practice the stroke: how to move your arms, how to turn your head to alternate breathing from side to side, and how to kick your legs. You would practice this many times until you become good at it. Once you learn how to swim freestyle and your body knows how to move through the water, you will never forget how to swim freestyle, even if you do not swim for a couple of decades. Similarly, if you present an accomplished guitarist with a guitar, even if he has not played in a long time, he will still be able to play quite well.

Explicit or declarative memory has to do with the storage of facts and events we personally experienced. Explicit (declarative) memory has two parts: semantic memory and episodic memory. Semantic means having to do with language and knowledge about language. An example would be the question, "what does *argumentative* mean?" Stored in our **semantic memory** is knowledge about words, concepts, and language-based knowledge and facts. For example, answers to the following questions are stored in your semantic memory:

- Who was the first President of the United States?
- What is democracy?
- What is the longest river in the world?

Episodic memory is information about events we have personally experienced. The concept of episodic memory was first proposed about 40 years ago (Tulving, 1972). Since then, Tulving and others have looked at the scientific evidence and reformulated the theory. Currently, scientists believe that episodic memory is memory about happenings in particular places at particular times, the what, where,

and when of an event (Tulving, 2002). It involves recollection of visual imagery as well as the feeling of familiarity (Hassabis & Maguire, 2007).

A component of episodic memory is **autobiographical memory,** or our personal narrative. Adolescents and adults rarely remember events from the first few years of life. We refer to the normal experience as infantile amnesia. In other words, we lack autobiographical memories from our experiences as an infant, toddler, and very young preschooler. Several factors contribute to the emergence of autobiographical memory, including brain maturation, improvements in language, opportunities to talk about experiences with parents and others, the development of the theory of mind, and a representation of "self" (Nelson & Fivush, 2004). Two-year-olds do remember fragments of personal experiences, but these are rarely coherent accounts of past events (Nelson & Ross, 1980). Between 2 and 2 ½ years of age, children can provide more information about past experiences. However, these recollections require considerable prodding by adults (Nelson & Fivush, 2004). Over the next few years, children will form more detailed autobiographical memories and engage in more reflection of the past.

Retrieval

So you have worked hard to encode (via effortful processing) and store some important information for your upcoming final exam. How do you get that information back out of storage when you need it? The act of getting information out of memory storage and back into conscious awareness is known as **retrieval**. This would be similar to finding and opening a paper you had previously saved on your computer's hard drive. Now it's back on your desktop, and you can work with it again. Our ability to retrieve information from long-term memory is vital to our everyday functioning. You must be

able to retrieve information from memory in order to do everything from knowing how to brush your hair and teeth, to driving to work, to knowing how to perform your job once you get there.



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https://childpsychology.pressbooks.sunycreate.cloud/?p=83#oembed-7

Video 6. *Retrieval Cues* discusses how cues prompt memory retrieval.

There are three ways you can retrieve information out of your long-term memory storage system: recall, recognition, and relearning. **Recall** is what we most often think about when we talk about memory retrieval: it means you can access information without cues. For example, you would use recall for an essay test. **Recognition** happens when you identify information that you have previously learned after encountering it again. It involves a process of comparison. When you take a multiple-choice test, you are relying on recognition to help you choose the correct answer. Here is another example. Let's say you graduated from high school 10 years ago, and you have returned to your hometown for your 10-year reunion. You may not be able to recall all of your classmates, but you recognize many of them based on their yearbook photos.



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Video 7. *Free Recall, Cued Recall, and Recognition* discusses the various ways in which information can be retrieved from long term memory.

The third form of retrieval is **relearning**, and it's just what it sounds like. It involves learning information that you previously learned. Whitney took Spanish in high school, but after high school she did not have the opportunity to speak Spanish. Whitney is now 31, and her company has offered her an opportunity to work in their Mexico City office. In order to prepare herself, she enrolls in a Spanish course at the local community center. She's surprised at how quickly she's able to pick up the language after not speaking it for 13 years; this is an example of relearning.



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Organization of Thinking

During middle childhood and adolescence, young people are able to learn and remember more due to improvements in the way they

attend to and store information. As people learn more about the world, they develop more categories for concepts and learn more efficient strategies for storing and retrieving information. One significant reason is that they continue to have more experiences on which to tie new information. In other words, their **knowledge base**, knowledge in particular areas that makes learning new information easier, expands (Berger, 2014).

Cognitive Control

As noted earlier, executive functions, such as attention, increases in working memory, and cognitive flexibility, have been steadily improving since early childhood. Studies have found that executive function is very competent in adolescence. However, **self-regulation**, or *the ability to control impulses*, may still fail. A failure in self-regulation is especially true when there is high stress or high demand on mental functions (Luciano & Collins, 2012). While high stress or demand may tax even an adult's self-regulatory abilities, neurological changes in the adolescent brain may make teens particularly prone to more risky decision-making under these conditions.

Inductive and Deductive Reasoning

Inductive reasoning emerges in childhood and is a type of reasoning that is sometimes characterized as "bottom-up-processing" in which *specific observations, or specific comments from those in authority, may be used to draw general conclusions.* However, in inductive reasoning, the veracity of the information that created the general conclusion does not guarantee the accuracy of that conclusion. For instance, a child who has only

observed thunder on summer days may conclude that it only thunders in the summer. In contrast, **deductive reasoning**, sometimes called "top-down processing," emerges in adolescence. This type of reasoning starts with some overarching principle, and based on this, proposes specific conclusions. Deductive reasoning guarantees a truthful conclusion if the premises on which it is based are accurate.

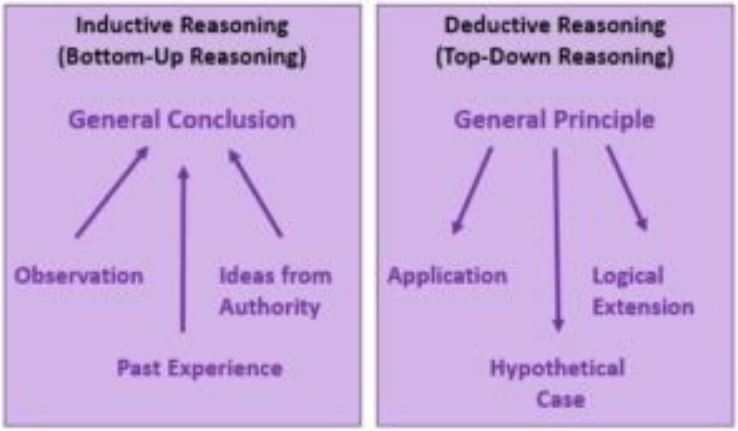


Figure 6. Models of inductive and deductive reasoning.

Intuitive versus Analytic Thinking

Cognitive psychologists often refer to intuitive and analytic thought as the Dual-Process Model, the notion that humans have two distinct networks for processing information (Albert & Steinberg, 2011). **Intuitive thought** is automatic, unconscious, and fast (Kahneman, 2011), and it is more experiential and emotional. In contrast, **Analytic thought** is deliberate, conscious, and rational. While these systems interact, they are distinct (Kuhn, 2013).

Intuitive thought is easier and more commonly used in everyday life. It is also more commonly used by children and teens than by adults (Klaczynski, 2001). The quickness of adolescent thought, along with the maturation of the limbic system, may make teens more prone to emotional, intuitive thinking than adults.

Critical Thinking

According to Bruning et al. (2004), there is a debate in U.S. education as to whether schools should teach students what to think or how to think. **Critical thinking**, or a detailed examination of beliefs, courses of action, and evidence, involves teaching children how to think. The purpose of critical thinking is to evaluate information in ways that help us make informed decisions. Critical thinking involves better understanding a problem through gathering, evaluating, and selecting information, and also by considering many possible solutions. Ennis (1987) identified several skills useful in critical thinking. These include: Analyzing arguments, clarifying information, judging the credibility of a source, making value judgments, and deciding on an action. Metacognition is essential to critical thinking because it allows us to reflect on the information as we make decisions.

Metacognition

As children mature through middle and late childhood and into adolescence, they have a better understanding of how well they are performing a task and the level of difficulty of a task. As they become more realistic about their abilities, they can adapt studying strategies to meet those needs. Young children spend as much time on an unimportant aspect of a problem as they do on the main point,

while older children start to learn to prioritize and gauge what is significant and what is not. As a result, they develop metacognition. **Metacognition** refers to the knowledge we have about our own thinking and our ability to use this awareness to regulate our own cognitive processes (Bruning, Schraw, Norby, & Ronning, 2004).

Bjorklund (2005) describes a developmental progression in the acquisition and use of memory strategies. Such strategies are often lacking in younger children but increase in frequency as children progress through elementary school. Examples of memory strategies include rehearsing information you wish to recall, visualizing and organizing information, creating rhymes, such as "i" before "e" except after "c," or inventing acronyms, such as "ROYGBIV" to remember the colors of the rainbow. Schneider, Kron-Sperl, and hünnerkopf (2009) reported a steady increase in the use of memory strategies from ages six to ten in their longitudinal study (see table 6.5.7). Moreover, by age ten, many children were using two or more memory strategies to help them recall information. Schneider and colleagues found that there were considerable individual differences at each age in the use of strategies and that children who utilized more strategies had better memory performance than their same-aged peers.

Age	Percentage
6	55
7	44
8	25
9	17
10	13

Table 7. Percentage of children who did not use any memory strategies by age.

A person may experience three deficiencies in their use of memory strategies. A **mediation deficiency** *occurs when a person does not grasp the strategy being taught, and thus, does not benefit*

from its use. If you do not understand why using an acronym might be helpful, or how to create an acronym, the strategy is not likely to help you. In a **production deficiency,** the person does not spontaneously use a memory strategy and has to be prompted to do so. In this case, the person knows the strategy and is more than capable of using it, but they fail to "produce" the strategy on their own. For example, a child might know how to make a list but may fail to do this to help them remember what to bring on a family vacation. A **utilization deficiency** refers to a person using an appropriate strategy, but it fails to aid their performance. Utilization deficiency is common in the early stages of learning a new memory strategy (Schneider & Pressley, 1997; miller, 2000). Until the use of the strategy becomes automatic, it may slow down the learning process, as space is taken up in memory by the strategy itself. Initially, children may get frustrated because their memory performance may seem worse when they try to use the new strategy. Once children become more adept at using the strategy, their memory performance will improve. Sodian and Schneider (1999) found that new memory strategies acquired prior to age eight often show utilization deficiencies, with there being a gradual improvement in the child's use of the strategy. In contrast, strategies acquired after this age often followed an "all-or-nothing" principle in which improvement was not gradual, but abrupt.

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Language Development

Language is a system of communication that uses symbols in a regular way to create meaning. Language gives us the ability to communicate our intelligence to others by talking, reading, and writing. Although other species have at least some ability to communicate, none of them have language.

If you've ever tried to learn a new language, you know it's not easy. There are new rules of grammar that come with many exceptions, new sounds that are hard to make, endless lists of vocabulary to commit to memory and so on. And yet, you managed to learn the basics of your very first language around the time you were two years old; no textbooks in sight.

Not only are children able to absorb the complicated rules of grammar without formal teaching, they do so from a limited vocabulary. Regardless of how much a child is spoken to, they will not hear every possible word and sentence by the time they begin speaking. Yet when they do start to talk, children begin to follow grammatical rules and apply them to form new, innovative phrases. This level of information processing is incredibly impressive in anyone, much less someone still figuring out counting and skipping!

Given the remarkable complexity of a language, one might expect that mastering a language would be an especially arduous task; indeed, for those of us trying to learn a second language as adults, this might seem to be true. However, young children master language very quickly with relative ease. B. F. Skinner (1957) proposed that language is learned through reinforcement. Noam Chomsky (1965) criticized this behaviorist approach, asserting instead that the mechanisms underlying language acquisition are biologically determined. The use of language develops in the absence of formal instruction and appears to follow a very similar pattern in children from vastly different cultures and backgrounds.

It would seem, therefore, that we are born with a biological predisposition to acquire a language (Chomsky, 1965; Fernández & Cairns, 2011). Moreover, it appears that there is a critical period for language acquisition, such that this proficiency at acquiring language is maximal early in life; generally, as people age, the ease with which they acquire and master new languages diminishes (Johnson & Newport, 1989; Lenneberg, 1967; Singleton, 1995).

There are many components of language that will now be reviewed.

The Structures of Language

All languages have underlying structural rules that make meaningful communication possible. Every language is different. In English, an adjective comes before a noun ("red house"), whereas in Spanish, the adjective comes after ("casa [house] roja [red]."). In German, you can put noun after noun together to form giant compound words; in Chinese, the pitch of your voice determines the meaning of your words; in American Sign Language, you can convey full, grammatical sentences with tense and aspect by moving your hands and face. But all languages have structural underpinnings that make them logical for the people who speak and understand them.

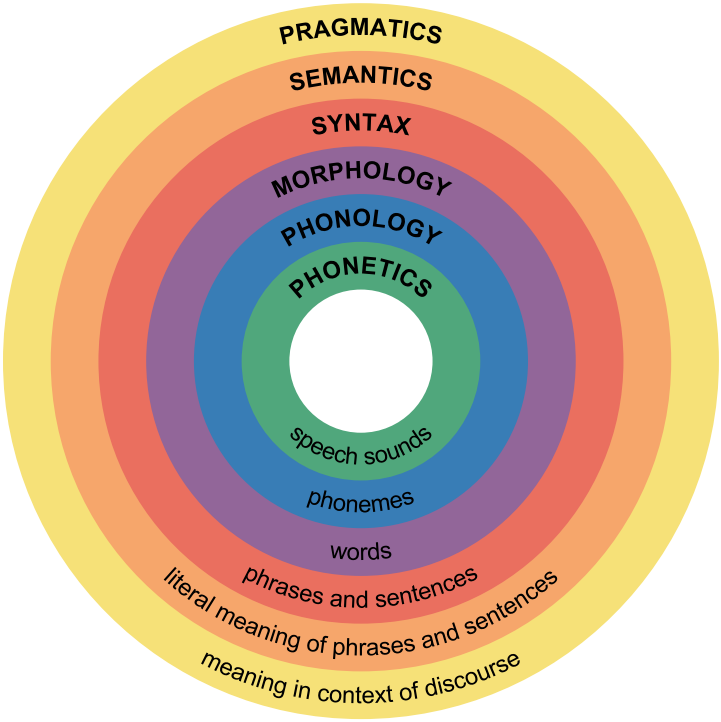


Figure 1. Major levels of linguistic structure. This diagram outlines the relationship between types of linguistic units. Speech sounds make up phonemes, which make up words. Words make up sentences, which have literal meanings and contextual meanings.

Phoneme

A **phoneme** is *the smallest unit of sound that makes a meaningful difference in a language*. This small sound may cause a change of meaning within a language, but that doesn't have meaning by itself. For example, in the words "bake" and "brake," only one phoneme

has been altered, but a change in meaning has been triggered. The phoneme /r/ has no meaning on its own, but by appearing in the word it has completely changed the word's meaning. In spoken languages, phonemes are produced by the positions and movements of the vocal tract, including our lips, teeth, tongue, vocal cords, and throat, whereas in sign languages phonemes are defined by the shapes and movement of the hands.

Phonemes correspond to the sounds of the alphabet, although there is not always a one-to-one relationship between a letter and a phoneme (the sound made when you say the word). For example, the word "dog" has three phonemes: /d/, /o/, and / g /. However, the word "shape," despite having five letters, has only three phonemes: /sh/, /long-a/, and /p/. There are hundreds of unique phonemes that can be made by human speakers, but most languages only use a small subset of the possibilities. English contains about 45 phonemes, whereas other languages have as few as 15 and others more than 60. The Hawaiian language contains fewer phonemes as it includes only 5 vowels (a, e, i, o, and u) and 7 consonants (h, k, l, m, n, p, and w).

Babies can discriminate among the sounds that make up a language (for example, they can tell the difference between the "s" in vision and the "ss" in fission); early on, they can differentiate between the sounds of all human languages, even those that do not occur in the languages that are used in their environment. However, they lose their ability to do so as they get older; by 10 months of age, they can only discriminate among those phonemes that are used in the language or languages in their environments (Jensen, 2011; Werker & Lalonde, 1988; Werker & Tees, 1984). Phonemes that were initially differentiated come to be treated as equivalent (Werker & Tees, 2002).

Morpheme

Whereas phonemes are the smallest units of sound in language, a **morpheme** is *a string of one or more phonemes that makes up the smallest units of meaning in a language*. Thus, a morpheme is a series of phonemes that has a special meaning. If a morpheme is altered in any way, the entire meaning of the word can be changed. Some morphemes are individual words (such as "eat" or "water"). These are known as free morphemes because they can exist on their own. Other morphemes are prefixes, suffixes, or other linguistic pieces that aren't full words on their own but do affect meaning (such as the "-s" at the end of "cats" or the "re-" at the beginning of "redo.") Because these morphemes must be attached to another word to have meaning, they are called bound morphemes.

Semantics

Semantics refers to *the set of rules we use to obtain meaning from morphemes*. For example, adding "ed" to the end of a verb makes it past tense.

Grammar and Syntax

Because all language obeys a set of combinatory rules, we can communicate an infinite number of concepts. While every language has a different set of rules, all languages do obey rules. These rules are known as grammar. Speakers of a language have internalized the rules and exceptions for that language's grammar. There are rules for every level of language—word formation (for example, native speakers of English have internalized the general rule that -ed is the ending for past-tense verbs, so even when they encounter a brand-

new verb, they automatically know how to put it into past tense); phrase formation (for example, knowing that when you use the verb "buy," it needs a subject and an object; "She buys" is wrong, but "She buys a gift" is okay); and sentence formation.

Syntax is *the set of rules of a language by which we construct sentences*. Each language has a different syntax. The syntax of the English language requires that each sentence have a noun and a verb, each of which may be modified by adjectives and adverbs. Some syntaxes make use of the order in which words appear. For example, in English "The man bites the dog" is different from "The dog bites the man."

Pragmatics

The social side of language is expressed through **pragmatics**, or *how we communicate effectively and appropriately with others*. Examples of pragmatics include turn- taking, staying on topic, volume and tone of voice, and appropriate eye contact. Lastly, words do not possess fixed meanings but change their interpretation as a function of the context in which they are spoken. We use **contextual information**, *the information surrounding language*, to help us interpret it. Examples of contextual information include our knowledge and nonverbal expressions such as facial expressions, postures, and gestures. Misunderstandings can easily arise if people are not attentive to contextual information or if some of it is missing, such as it may be in newspaper headlines or in text messages.

Pre-Linguistic Pragmatics

Video 1. *Talking Twin Babies* demonstrates how children can learn and use pragmatics even before they can produce language.



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Language Development Progression

Children begin to learn about language from a very early age (Table 1). In fact, it appears that this is occurring even before we are born. Newborns show a preference for their mother's voice and appear to be able to discriminate between the language spoken by their mother and other languages. Babies are also attuned to the languages being used around them and show preferences for videos of faces that are moving in synchrony with the audio of spoken language versus videos that do not synchronize with the audio (Blossom &

Morgan, 2006; Pickens, 1994; Spelke & Cortelyou, 1981).

Table 1. Stages of Language and Communication Development

Stage	Age	Developmental Language and Communication
1	0–3 months	Reflexive communication
2	3–8 months	Reflexive communication; interest in others
3	8–12 months	Intentional communication; sociability
4	12–18 months	First words
5	18–24 months	Simple sentences of two words
6	2–3 years	Sentences of three or more words
7	3–5 years	Complex sentences; has conversations

Intentional Vocalizations

In terms of producing spoken language, babies begin to coo almost immediately. **Cooing** *is a one-syllable combination of a consonant and a vowel sound* (e.g., coo or ba). Interestingly, babies replicate sounds from their own languages. A baby whose parents speak French will coo in a different tone than a baby whose parents speak Spanish or Urdu. These gurgling, musical vocalizations can serve as a source of entertainment to an infant who has been laid down for a nap or seated in a carrier on a car ride. Cooing serves as practice for vocalization, as well as the infant hears the sound of his or her own voice and tries to repeat sounds that are entertaining. Infants also begin to learn the pace and pause of conversation as they alternate their vocalization with that of someone else and then take their turn again when the other person's vocalization has stopped.

At about four to six months of age, infants begin making even more elaborate vocalizations that include the sounds required for any language. Guttural sounds, clicks, consonants, and vowel sounds stand ready to equip the child with the ability to repeat whatever sounds are characteristic of the language heard.

Eventually, these sounds will no longer be used as the infant grows more accustomed to a particular language.

At about 7 months, infants begin **Babbling**, engaging in *intentional vocalizations that lack specific meaning and comprise a consonant-vowel repeated sequence, such as ma-ma-ma, da-da- da.* Children babble as practice in creating specific sounds, and by the time they are 1 year old, the babbling uses primarily the sounds of the language that they are learning (de Boysson- Bardies, Sagart, & Durand, 1984). These vocalizations have a conversational tone that sounds meaningful even though it isn't. Babbling also helps children understand the social, communicative function of language. Children who are exposed to sign language babble in sign by making hand movements that represent real language (Petitto & Marentette, 1991).



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Gesturing

Children communicate information through gesturing long before they speak, and there is some evidence that gesture usage predicts subsequent language development (Iverson & Goldin-Meadow, 2005). Deaf babies also use gestures to communicate wants, reactions, and feelings. Because gesturing seems to be easier than vocalization for some toddlers, sign language is sometimes taught to enhance one's ability to communicate by making use of the ease

of gesturing. The rhythm and pattern of language is used when deaf babies sign just as it is when hearing babies babble.

Examples

Video 2. *Baby Sign Language* demonstrates how infants can be taught sign language to communicate before they can speak. Most infants will begin gesturing on their own around 10 months old, but infants can be taught gestures, like signs, before they are 6 months old.



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Receptive Language

At around ten months of age, the infant *can understand more than he or she can say, which is referred to as* **receptive language**. You may have experienced this phenomenon as well if you have ever tried to learn a second language. You may have been able to follow a conversation more easily than contribute to it. One of the first words that children understand is their own name, usually by about

6 months, followed by commonly used words like "bottle," "mama," and "doggie" by 10 to 12 months (Mandel, Jusczyk, & Pisoni, 1995).

Infants shake their head "no" around 6–9 months, and they respond to verbal requests to do things like "wave bye-bye" or "blow a kiss" around 9–12 months. Children also use contextual information, particularly the cues that parents provide, to help them learn language. Children learn that people are usually referring to things that they are looking at when they are speaking (Baldwin, 1993), and that that the speaker's emotional expressions are related to the content of their speech.

Productive Language

Children begin using their first words at about 12 or 13 months of age and may use partial words to convey thoughts at even younger ages. *These one word expressions are referred to as* **holophrasic speech.** For example, the child may say "ju" for the word "juice" and use this sound when referring to a bottle. The listener must interpret the meaning of the holophrase, and when this is someone who has spent time with the child, interpretation is not too difficult. But, someone who has not been around the child will have trouble knowing what is meant. Imagine the parent who to a friend exclaims, "Ezra's talking all the time now!" The friend hears only "ju da ga" to which the parent explains means, "I want some milk when I go with Daddy."

First words and Cultural Influences

First words if the child is using English tend to be nouns. The child labels objects such as cup, ball, or other items that they regularly interact with. In a verb-friendly language such as Chinese, however, children may learn more verbs. This may also be due to the different

emphasis given to objects based on culture. Chinese children may be taught to notice action and relationships between objects, while children from the United States may be taught to name an object and its qualities (color, texture, size, etc.). These differences can be seen when comparing interpretations of art by older students from China and the United States.

Two-word Sentences and Telegraphic Speech

By the time they become toddlers, children have a vocabulary of about 50-200 words and begin putting those words together in telegraphic speech, such as "baby bye-bye" or "doggie pretty". Words needed to convey messages are used, but the articles and other parts of speech necessary for grammatical correctness are not yet used. These expressions sound like a telegraph, or perhaps a better analogy today would be that they read like a text message. **Telegraphic Speech/Text Message Speech** *occurs when unnecessary words are not used.* "Give baby ball" is used rather than "Give the baby the ball."



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Language Errors

The early utterances of children contain many errors, for instance,

confusing /b/ and /d/, or /c/ and /z/. The words children create are often simplified, in part because they are not yet able to make more complex sounds of the real language (Dobrich & Scarborough, 1992). Children may say "keekee" for kitty, "nana" for banana, and "vesketti" for spaghetti because it is easier. Often these early words are accompanied by gestures that may also be easier to produce than the words themselves. Children's pronunciations become increasingly accurate between 1 and 3 years, but some problems may persist until school age.

A child who learns that a word stands for an object may initially think that the *word can be used for only that particular object*, which is referred to as **Underextension.** Only the family's Irish Setter is a "doggie", for example. More often, however, a child may think that *a label applies to all objects that are similar to the original object*, which is called **Overextension.** For example, all animals become "doggies".



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Link to Learning

Read this article to learn more about common linguistic mistakes that children make and what they mean: 10 Language Mistakes Kids Make That Are Actually Pretty Smart.

Child-Directed Speech

Why is a horse a "horsie"? Have you ever wondered why adults tend to use "baby talk" or that sing-song type of intonation and exaggeration used when talking to children? This represents a universal tendency and is known as **child-directed Speech.** *It involves exaggerating the vowel and consonant sounds, using a high-pitched voice, and delivering the phrase with great facial expression* (Clark, 2009). Why is this done? Infants are frequently more attuned to the tone of voice of the person speaking than to the content of the words themselves, and are aware of the target of speech. Werker, Pegg, and McLeod (1994) found that infants listened longer to a woman who was speaking to a baby than to a woman who was speaking to another adult. It may be in order to clearly articulate the sounds of a word so that the child can hear the sounds involved. It may also be because when this type of speech is used, the infant pays more attention to the speaker and this sets up a pattern of interaction in which the speaker and listener are in tune with one another.

Watch It

Video 3. This video examines new research on child-directed speech.



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Vocabulary

A child's vocabulary expands between the ages of two to six from about 200 words to over 10,000 words. This "vocabulary spurt" typically involves 10-20 new words per week and is accomplished through a process called **fast-mapping**. *Words are easily learned by making connections between new words and concepts already known.* The parts of speech that are learned depend on the language and what is emphasized. Children speaking verb-friendly languages, such as Chinese and Japanese, learn verbs more readily, while those speaking English tend to learn nouns more readily. However, those learning less verb-friendly languages, such as English, seem to need assistance in grammar to master the use of verbs (Imai et al., 2008).

One of the reasons that children can classify objects in so many ways is that they have acquired a vocabulary to do so. By fifth grade, a child's vocabulary has grown to 40,000 words. It grows at a rate that exceeds that of those in early childhood. This language explosion, however, differs from that of younger children because it is facilitated by being able to associate new words with those already known, and because it is accompanied by a more sophisticated understanding of the meanings of a word.

Children can repeat words and phrases after having heard them

only once or twice, but they do not always understand the meaning of the words or phrases. This is especially true of expressions or figures of speech which are taken literally. For example, a classroom full of preschoolers hears the teacher say, "Wow! That was a piece of cake!" The children began asking "Cake? Where is my cake? I want cake!"

Those in middle and late childhood are also able to think of objects in less literal ways. For example, if asked for the first word that comes to mind when one hears the word "pizza", the younger child is likely to say "eat" or some word that describes what is done with a pizza. However, the older child is more likely to place pizza in the appropriate category and say "food". This sophistication of vocabulary is also evidenced by the fact that older children tell jokes and delight in doing do. They may use jokes that involve plays on words such as "knock- knock" jokes or jokes with punch lines. Young children do not understand play on words and tell "jokes" that are literal or slapstick, such as "A man fell down in the mud! Isn't that funny?"

30 Million Word Gap

To accomplish the tremendous rate of word learning that needs to occur during early childhood, it is important that children are learning new words each day. Research by Betty Hart and Todd Risley in the late 1990s and early 2000s indicated that children from less advantaged backgrounds are exposed to millions of fewer words in their first three years of life than children who come from more privileged socioeconomic backgrounds. In their research, families were classified by socioeconomic status, (SES) into "high" (professional), "middle" (working class), and

"low" (welfare) SES. They found that the average child in a professional family hears 2,153 words per waking hour, the average child in a working-class family hears 1,251 words per hour, and an average child in a welfare family only 616 words per hour. Extrapolating, they stated that, "in four years, an average child in a professional family would accumulate experience with almost 45 million words, an average child in a working-class family 26 million words, and an average child in a welfare family 13 million words." The line of thinking following their study is that children from more affluent households would enter school knowing more words, which would give them advantage in school.

Hart and Risley's research has been criticized by scholars. Critics theorize that the language and achievement gaps are not a result of the number of words a child is exposed to, but rather alternative theories suggest it could reflect the disconnect of linguistic practices between home and school. Thus, judging academic success and linguistic capabilities from socioeconomic status may ignore bigger societal issues. A recent replication of Hart and Risley's study with more participants has found that the "word gap" may be closer to 4 million words, not the oft-cited 30 million words previously proposed. The ongoing word gap research is evidence of the importance of language development in early childhood.

Video 4. Watch as Dr. John Gabrieli, from the MIT McGovern Institute for Brain Development explains how early language exposure affects language

development. His research uses the current technology to correlate home language experiences with brain function. They determined that the number of conversational turns was more important to development in Broca's area (brain region linked to speech production) than the number of words heard or the family's socioeconomic status.



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Grammar and Flexibility

Older children are also able to learn new rules of grammar with more flexibility. While younger children are likely to be reluctant to give up saying "I goed there", older children will learn this rather quickly along with other rules of grammar.

Bilingualism

Although monolingual speakers often do not realize it, the majority of children around the world are **Bilingual**, *meaning that they understand and use two languages* (Meyers- Sutton, 2005). Even in the United States, which is a relatively monolingual society, more than 47 million people speak a language other than English at home, and about 10 million of these people are children or youths in public schools (United States Department of Commerce, 2003). The large majority of bilingual students (75%) are Hispanic, but the rest represent more than a hundred different language groups from around the world. In larger communities throughout the United States, it is therefore common for a single classroom to contain students from several language backgrounds at once. In classrooms, as in other social settings, bilingualism exists in different forms and degrees. At one extreme are students who speak both English and another language fluently; at the other extreme are those who speak only limited versions of both languages. In between are students who speak their home (or heritage) language much better than English, as well as others who have partially lost their heritage language in the process of learning English (Tse, 2001). Commonly, a student may speak a language satisfactorily but be challenged by reading or writing it. Whatever the case, each bilingual student poses unique challenges to teachers.

The student who speaks both languages fluently has a definite cognitive advantage. As you might suspect and research confirmed, a fully fluent bilingual student is in a better position to express concepts or ideas in more than one way, and to be aware of doing so (Jimenez, Garcia, & Pearson, 1995; Francis, 2006). Unfortunately, the bilingualism of many students is unbalanced in the sense that they are either still learning English, or else they have lost some earlier ability to use their original, heritage language. Losing one's original language is a concern as research finds that language loss limits students' ability to learn English as well or as quickly as they

could do. Having a large vocabulary in a first language has been shown to save time in learning vocabulary in a second language (Hansen, Umeda & McKinney, 2002). Preserving the first language is important if a student has impaired skill in all languages and therefore needs intervention or help from a speech-language specialist. Research has found, in such cases, that the specialist can be more effective if the specialist speaks and uses the first language as well as English (Kohnert, Yim, Nett, Kan, & Duran, 2005).

Watch It

Video 5. This video explains some of the research surrounding language acquisition in babies, particularly those learning a second language.



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Theories of Language Development

Psychological theories of language learning differ in terms of the importance they place on nature and nurture. Remember that we are a product of both nature and nurture. Researchers now believe that language acquisition is partially inborn and partially learned through our interactions with our linguistic environment (Gleitman & Newport, 1995; Stork & Widdowson, 1974).



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Video 6. *Theories of Language Development* discusses the major theories of how language develops in children.

Learning Theory

Perhaps the most straightforward explanation of language development is that it occurs through the principles of learning, including association and reinforcement (Skinner, 1953). Additionally, Bandura (1977) described the importance of observation and imitation of others in learning language. There must be at least some truth to the idea that language is learned through environmental interactions or nurture. Children learn the language that they hear spoken around them rather than some other language. Also supporting this idea is the gradual improvement of language skills with time. It seems that children modify their language through imitation and reinforcement, such as parental praise and being understood. For example, when a two-

year-old child asks for juice, he might say, "me juice," to which his mother might respond by giving him a cup of apple juice.

However, language cannot be entirely learned. For one, children learn words too fast for them to be learned through reinforcement. Between the ages of 18 months and 5 years, children learn up to 10 new words every day (Anglin, 1993). More importantly, language is more *generative* than it is imitative**.** Language is not a predefined set of ideas and sentences that we choose when we need them, but rather a system of rules and procedures that allows us to create an infinite number of statements, thoughts, and ideas, including those that have never previously occurred. When a child says that she "swimmed" in the pool, for instance, she is showing generativity. No adult speaker of English would ever say "swimmed," yet it is easily generated from the normal system of producing language.

Other evidence that refutes the idea that all language is learned through experience comes from the observation that children may learn languages better than they ever hear them. Deaf children whose parents do not speak ASL very well nevertheless are able to learn it perfectly on their own, and may even make up their own language if they need to (Goldin-Meadow & Mylander, 1998). A group of deaf children in a school in Nicaragua, whose teachers could not sign, invented a way to communicate through made-up signs (Senghas, Senghas, & Pyers, 2005). The development of this new Nicaraguan Sign Language has continued and changed as new generations of students have come to the school and started using the language. Although the original system was not a real language, it is becoming closer and closer every year, showing the development of a new language in modern times.



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Nativism

The linguist Noam Chomsky is a believer in the nature approach to language, arguing that human brains contain a **Language Acquisition Device** that includes a *universal grammar* that underlies all human language (Chomsky, 1965, 1972). According to this approach, each of the many languages spoken around the world (there are between 6,000 and 8,000) is an individual example of the same underlying set of procedures that are hardwired into human brains. Chomsky's account proposes that children are born with a knowledge of general rules of syntax that determine how sentences are constructed. Language develops as long as the infant is exposed to it. No teaching, training, or reinforcement is required for language to develop as proposed by Skinner.

Chomsky differentiates between the **deep structure** of an idea; that is, *how the idea is represented in the fundamental universal grammar that is common to all languages*, and the **surface structure** of the idea or *how it is expressed in any one language*. Once we hear or express a thought in surface structure, we generally forget exactly how it happened. At the end of a lecture, you will remember a lot of the deep structure (i.e., the ideas expressed by the instructor), but you cannot reproduce the surface structure (the exact words that the instructor used to communicate the ideas).

Although there is general agreement among psychologists that babies are genetically programmed to learn language, there is still debate about Chomsky's idea that there is a universal grammar that

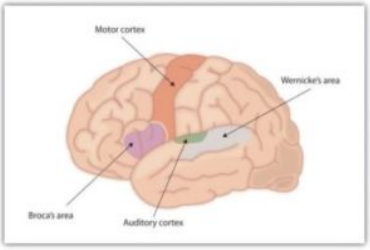
can account for all language learning. Evans and Levinson (2009) surveyed the world's languages and found that none of the presumed underlying features of the language acquisition device were entirely universal. In their search they found languages that did not have noun or verb phrases, that did not have tenses (e.g., past, present, future), and even some that did not have nouns or verbs at all, even though a basic assumption of a universal grammar is that all languages should share these features.

Critical Periods

Anyone who has tried to master a second language as an adult knows the difficulty of language learning. Yet children learn languages easily and naturally. Children who are not exposed to language early in their lives will likely never learn one. Case studies, including Victor the "Wild Child," who was abandoned as a baby in France and not discovered until he was 12, and Genie, a child whose parents kept her locked in a closet from 18 months until 13 years of age, are (fortunately) two of the only known examples of these deprived children. Both of these children made some progress in socialization after they were rescued, but neither of them ever developed language (Rymer, 1993). This is also why it is important to determine quickly if a child is deaf, and to communicate in sign language immediately. Deaf children who are not exposed to sign language during their early years will likely never learn it (Mayberry, Lock, & Kazmi, 2002). The concept of

critical periods highlights the importance of both nature and nurture for language development.

Brain Areas for Language



For the 90% of people who are right-handed, language is stored and controlled by the left cerebral cortex, although for some left-handers this pattern is reversed. These differences can easily be seen in the results of neuroimaging studies that show that listening to and producing language creates greater activity in the left hemisphere than in the right. **Broca's area**, *an area in front of the left hemisphere near the motor cortex, is responsible for language production* (Figure 3.21). This area was first localized in the 1860s by the French physician Paul Broca, who studied patients with lesions to various parts of the brain. **Wernicke's area**, *an area of the brain next to the auditory cortex, is responsible for language comprehension.*

Figure 2. Drawing of Brain Showing Broca's and Wernicke's Areas for most people the left hemisphere is specialized for language. Broca's area, near the motor cortex, is involved in language production, whereas Wernicke's area, near the auditory cortex, is specialized for language comprehension.

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Video 7. *Language and the Brain* reviews major brain structures and functions involved in language.

Interactionist Approach

The **interactionist approach** (sociocultural theory) combines ideas from psychology and biology to explain how language is developed. According to this theory, children learn language out of a desire to communicate with the world around them. Language emerges from, and is dependent upon, social interaction. The Interactionist approach claims that if our language ability develops out of a desire to communicate, then language is dependent upon whom we want to communicate with. This means the environment you grow up in will heavily affect how well and how quickly you learn to talk. For example, infants being raised by only their mother are more likely to learn the word "mama", and less likely to develop "dada". Among the first words we learn are ways to demand attention or food. If you've ever tried to learn a new language, you may recognize this theory's influence. Language classes often teach commonly used vocabulary and phrases first, and then focus on building conversations rather than simple rote memorization. Even when we expand our vocabularies in our native language, we remember the words we use the most.

Social pragmatics

Language from this view is not only a cognitive skill but also a social one. Language is a tool humans use to communicate, connect to, influence, and inform others. Most of all, language comes out of a need to cooperate. The social nature of language has been demonstrated by a number of studies that have shown that children use several pre-linguistic skills (such as pointing and other gestures) to communicate not only their own needs but what others may need. So a child watching her mother search for an object may point to the object to help her mother find it.

Eighteen-month to 30-month-olds have been shown to make linguistic repairs when it is clear that another person does not understand them (Grosse, Behne, Carpenter & Tomasello, 2010). Grosse et al. (2010) found that even when the child was given the desired object, if there had been any misunderstanding along the way (such as a delay in being handed the object, or the experimenter calling the object by the wrong name), children would make linguistic repairs. This would suggest that children are using language not only as a means of achieving some material goal, but to make themselves understood in the mind of another person.

Vygotsky and Language Development

Lev Vygotsky hypothesized that children had a **zone of proximal development (ZPD)**. The ZPD is the range of material that a child is ready to learn if proper support and guidance are given from either a peer who understands the material or by an adult. We can see the benefit of this sort of guidance when we think about the acquisition of language. Children can be assisted in learning language by others who listen attentively, model more accurate pronunciations and encourage elaboration. For example, if the child exclaims, "I'm goed there!" then the adult responds, "You went there?"

Children may be hard-wired for language development, as Noam Chomsky suggested in his theory of universal grammar, but active participation is also important for language development. The process of **scaffolding** is one in which the guide provides needed assistance to the child as a new skill is learned. Repeating what a child has said, but in a grammatically correct way, is scaffolding for a child who is struggling with the rules of language production.

Private Speech

Do you ever talk to yourself? Why? Chances are, this occurs when you are struggling with a problem, trying to remember something or feel very emotional about a situation. Children talk to themselves too. Piaget interpreted this as egocentric speech or a practice engaged in because of a child's inability to see things from other points of view. Vygotsky, however, believed that children talk to themselves in order to solve problems or clarify thoughts. As children learn to think in words, they do so aloud before eventually closing their lips and engaging in **private speech** or inner speech. Thinking out loud eventually becomes thought accompanied by internal speech, and talking to oneself becomes a practice only engaged in when we are trying to learn something or remember something, etc. This inner speech is not as elaborate as the speech we use when communicating with others (Vygotsky, 1962).

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Intelligence

For nearly a century, educators and psychologists have debated the nature of intelligence, and more specifically whether intelligence is just one broad ability or can take more than one form. Many classical definitions of the concept have tended to define **intelligence** as a single broad ability that allows a person to solve or complete many sorts of tasks, or at least many academic tasks like reading, knowledge of vocabulary, and the solving of logical problems (Garlick, 2002). Other psychologists believe that instead of a single factor, intelligence is a collection of distinct abilities. Still, other psychologists believe that intelligence should be defined in more practical terms. We'll review three perspectives on intelligence, Spearman's g, Sternberg's Triarchic Theory of Intelligence, and Gardner's Frame of Mind. Understanding theories of intelligence will help us understand variations in students' intellectual abilities.

British psychologist Charles Spearman believed intelligence consisted of one general factor, called *g*, which could be measured and compared among individuals. Spearman focused on the commonalities among various intellectual abilities and deemphasized what made each unique. There is research evidence of such a global ability, and the idea of general intelligence often fits with society's everyday beliefs about intelligence. Partly for these reasons, an entire mini-industry has grown up around publishing tests of intelligence, academic ability, and academic achievement. Since these tests affect the work of teachers, I return to discussing them later in this book.



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Video 1. *Intelligence* explains the different definitions of intelligence and the nature/nurture debate in the context of intelligence.

Measuring Intelligence: Standardization and the Intelligence Quotient

The goal of most intelligence tests is to measure "g," the general intelligence factor. Good intelligence tests are **reliable,** *meaning that they are consistent over time*, and also demonstrate **validity,** *meaning that they actually measure intelligence rather than something else*. Because intelligence is such an important individual difference dimension, psychologists have invested substantial effort in creating and improving measures of intelligence, and these tests are now considered the most accurate of all psychological tests. In fact, the ability to accurately assess intelligence is one of the most important contributions of psychology to everyday public life.

Intelligence changes with age. A 3-year-old who could accurately multiply 183 by 39 would certainly be intelligent, but a 25-year-old who could not do so would be seen as unintelligent. Thus understanding intelligence requires that we know the norms or standards in a given population of people at a given age. The **standardization** of a test involves giving it to a large number of people at different ages and computing the average score on the test at each age level.

It is important that intelligence tests be standardized on a regular basis, because the overall level of intelligence in a population may

change over time. The **Flynn effect** refers to *the observation that scores on intelligence tests worldwide have increased substantially over the past decades* (Flynn, 1999). Although the increase varies somewhat from country to country, the average increase is about 3 IQ points every 10 years. There are many explanations for the Flynn effect, including better nutrition, increased access to information, and more familiarity with multiple-choice tests (Neisser, 1998). But whether people are actually getting smarter is debatable (Neisser, 1997).

Once the standardization has been accomplished, we have a picture of the average abilities of people at different ages and can calculate a person's **mental age**, which is *the age at which a person is performing intellectually*. If we compare the mental age of a person to the person's chronological age, the result is the **intelligence quotient (IQ),** *a measure of intelligence that is adjusted for age*. A simple way to calculate IQ is by using the following formula:

$$\text{IQ} = \text{mental age} \div \text{chronological age} \times 100.$$

Thus a 10-year-old child who does as well as the average 10-year-old child has an IQ of 100 (10 ÷ 10 × 100), whereas an 8-year-old child who does as well as the average 10-year-old child would have an IQ of 125 (10 ÷ 8 × 100). Most modern intelligence tests are based on the relative position of a person's score among people of the same age, rather than on the basis of this formula, but the idea of an intelligence "ratio" or "quotient" provides a good description of the score's meaning.

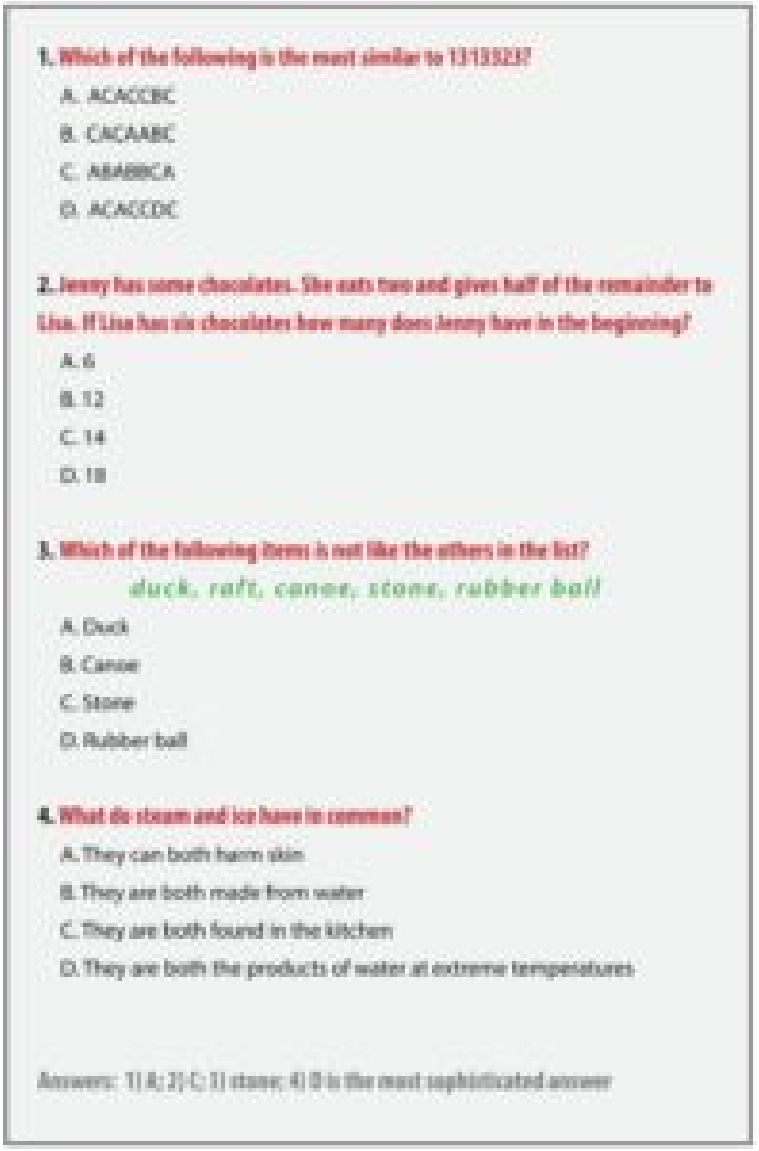


Figure 1. Examples of the types of items you might see on an intelligence test.

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Wechsler Scales

The **Wechsler Adult Intelligence Scale (WAIS)** is the most widely used intelligence test for adults (Watkins, Campbell, Nieberding, & Hallmark, 1995). The current version of the WAIS, the WAIS-IV, was standardized on 2,200 people ranging from 16 to 90 years of age. It consists of 15 different tasks, each designed to assess intelligence, including working memory, arithmetic ability, spatial ability, and general knowledge about the world. The WAIS-IV yields scores on four domains: verbal, perceptual, working memory, and processing speed. The reliability of the test is high (more than 0.95), and it shows substantial construct validity. The WAIS-IV is correlated highly with other IQ tests such as the Stanford-Binet, as well as with criteria of academic and life success, including college grades, measures of work performance, and occupational level. It also shows significant correlations with measures of everyday functioning among people with intellectual disabilities.

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Video 2. *Brain vs. Bias* provides an overview of the WAIS & WISC tests, standardization and validity, and IQ performance.

The Wechsler scale has also been adapted for preschool children in the form of the *Wechsler primary and preschool scale of intelligence-fourth edition* (WPPSI-IV) and for older children and adolescents in the form of the *Wechsler intelligence scale for children-fifth edition* (WISC-V).

Bias in Intelligence Testing

Intelligence tests and psychological definitions of intelligence have been heavily criticized since the 1970s for being biased in favor of Anglo-American, middle-class respondents and for being inadequate tools for measuring non-academic types of intelligence or talent. Intelligence changes with experience, and intelligence quotients or scores do not reflect that ability to change. What is considered smart varies culturally as well, and most intelligence tests do not take this variation into account. For example, in the West, being smart is associated with being quick. A person who answers a question the fastest is seen as the smartest, but in some cultures, being smart is associated

with considering an idea thoroughly before giving an answer. A well- thought out, contemplative answer is the best answer.

watch it

Video 3. Watch this video to learn more about the history behind intelligence testing.



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Theories of Intelligence

Psychologists have long debated how to best conceptualize and measure intelligence (Sternberg, 2003). These questions include how many types of intelligence there are, the role of nature versus nurture in intelligence, how intelligence is represented in the brain, and the meaning of group differences in intelligence.



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Video 4. *Theories of Intelligence* reviews a few of the different theoretical views of intelligence.

General Intelligence Factor ("g")

From 1904-1905 the French psychologist Alfred Binet (1857–1914) and his colleague Théodore Simon (1872–1961) began working on behalf of the French government to develop a measure that would identify children who would not be successful with the regular school curriculum. The goal was to help teachers better educate these students (Aiken, 1994). Binet and Simon developed what most psychologists today regard as the first intelligence test, which consisted of a wide variety of questions that included the ability to name objects, define words, draw pictures, complete sentences, compare items, and construct sentences.

Binet and Simon (Binet, Simon, & Town, 1915; Siegler, 1992) believed that the questions they asked the children all assessed the basic abilities to understand, reason, and make judgments. It turned out that the correlations among these different types of measures were, in fact, all positive; that is, students who got one item correct were more likely to also get other items correct, even though the questions themselves were very different.

On the basis of these results, the psychologist Charles Spearman (1863–1945) hypothesized that there must be a single underlying construct that all of these items measure. He called *the construct that the different abilities and skills measured on intelligence tests*

have in common the **general intelligence factor (g).** Virtually all psychologists now believe that there is a generalized intelligence factor, "g," that relates to abstract thinking and that includes the abilities to acquire knowledge, to reason abstractly, to adapt to novel situations, and to benefit from instruction and experience (Gottfredson, 1997; Sternberg, 2003). People with higher general intelligence learn faster.

Soon after Binet and Simon introduced their test, the American psychologist Lewis Terman at Stanford University (1877–1956) developed an American version of Binet's test that became known as the *Stanford- Binet intelligence test*. The Stanford-Binet is a measure of general intelligence made up of a wide variety of tasks, including vocabulary, memory for pictures, naming of familiar objects, repeating sentences, and following commands.

Sternberg's Triarchic theory

Although there is general agreement among psychologists that "g" exists, there is also evidence for **specific intelligence** "s," *a measure of specific skills in narrow domains*. One empirical result in support of the idea of "s" comes from intelligence tests themselves. Although the different types of questions do correlate with each other, some items correlate more highly with each other than do other items; they form clusters or clumps of intelligences.

One advocate of the idea of multiple intelligences is the psychologist Robert Sternberg. Sternberg has proposed a **Triarchic (three-part) Theory of Intelligence** that proposes that *people may display more or less analytical intelligence, creative intelligence, and practical intelligence*. Sternberg (1985, 2003) argued that traditional intelligence tests assess **analytical intelligence**, *academic problem solving and performing calculations*, but that they do not typically assess **creative intelligence**, *the ability to adapt to new situations*

and create new ideas, and/or **practical intelligence**, *the ability to demonstrate common sense and street- smarts.*

As Sternberg proposed, research has found that creativity is not highly correlated with analytical intelligence (Furnham & Bakhtiar, 2008), and exceptionally creative scientists, artists, mathematicians, and engineers do not score higher on intelligence than do their less creative peers (Simonton, 2000). Furthermore, the brain areas that are associated with **convergent thinking**, *thinking that is directed toward finding the correct answer to a given problem*, are different from those associated with **divergent thinking**, *the ability to generate many different ideas or solutions to a single problem* (Tarasova, Volf, & Razoumnikova, 2010). On the other hand, being creative often takes some of the basic abilities measured by "g," including the abilities to learn from experience, to remember information, and to think abstractly (bink & marsh, 2000). Ericsson (1998), Weisberg (2006), Hennessey and Amabile (2010), and Simonton (1992) studied creative people and identified at least five components that are likely to be important for creativity as listed in Table 1.

Table 1. Important components for creativity

Component	Description
Expertise	Creative people have studied and learned about a topic
Imaginative Thinking	Creative people view problems in new and different ways
Risk-Taking	Creative people take on new, but potentially risky approaches
Intrinsic Interest	Creative people take on projects for interest, not money
Working in Creative Environments	The most creative people are supported, aided, and challenged by other people working on similar projects

The last aspect of the triarchic model, practical intelligence, refers primarily to intelligence that cannot be gained from books or formal

learning. Practical intelligence represents a type of "street smarts" or "common sense" that is learned from life experiences. Although a number of tests have been devised to measure practical intelligence (Sternberg, Wagner, & Okazaki, 1993; Wagner & Sternberg, 1985), research has not found much evidence that practical intelligence is distinct from "g" or that it is predictive of success at any particular tasks (Gottfredson, 2003). Practical intelligence may include, at least in part, certain abilities that help people perform well at specific jobs, and these abilities may not always be highly correlated with general intelligence (Sternberg et al., 1993).

Gardner's Frame of Mind

Theory of multiple intelligences: another champion of the idea of specific types of intelligences rather than one overall intelligence is the psychologist Howard Gardner (1983, 1999). Gardner argued that it would be evolutionarily functional for different people to have different talents and skills, and proposed that there are eight intelligences that can be differentiated from each other. A potential ninth intelligence, existential intelligence, still needs empirical support. Gardner investigated intelligences by focusing on children who were talented in one or more areas and adults who suffered from strokes that compromised some capacities, but not others. Gardner also noted that some evidence for multiple intelligences comes from the abilities of **autistic savants**, *people who score low on intelligence tests overall but who nevertheless may have exceptional skills in a given domain*, such as math, music, art, or in being able to recite statistics in a given sport (Treffert & Wallace, 2004). In addition to brain damage and the existence of savants, Gardner identified these 8 intelligences based on other criteria, including a set developmental history and psychometric findings. See table 7.1.2 for a list of Gardner's eight specific intelligences.

Table 2. Howard Gardner's eight specific intelligences

Intelligence	Description
Linguistic	The ability to speak and write well
Logical-mathematical	The ability to use logic and mathematical skills to solve problems
Spatial	The ability to think and reason about objects in three dimensions
Musical	The ability to perform and enjoy music
Kinesthetic (body)	The ability to move the body in sports, dance, or other physical activities
Interpersonal	The ability to understand and interact effectively with others
Intrapersonal	The ability to have insight into the self
Naturalistic	The ability to recognize, identify, and understand animals, plants, and other living things

Source: Adapted from Gardner, H. (1999). *Intelligence Framed: Multiple Intelligences for the 21st Century*. New York, NY: Basic Books.

The idea of multiple intelligences has been influential in the field of education, and teachers have used these ideas to try to teach differently to different students. For instance, to teach math problems to students who have particularly good kinesthetic intelligence, a teacher might encourage the students to move their bodies or hands according to the numbers. On the other hand, some have argued that these "intelligences" sometimes seem more like "abilities" or "talents" rather than real intelligence. There is no clear conclusion about how many intelligences there are. Our sense of humor, artistic skills, dramatic skills, and so forth also separate intelligences? Furthermore, and again demonstrating the underlying power of a single intelligence, the many different intelligences are, in fact, correlated and thus represent, in part, "g" (Brody, 2003).

Nonetheless, whatever the status of the research evidence, the model itself can be useful as a way for teachers to think about their work. Multiple intelligences suggest the importance of diversifying instruction in order to honor and to respond to diversity in

students' talents and abilities. Viewed like this, whether Gardner's classification scheme is actually accurate is probably less important than the fact there is (or may be) more than one way to be "smart." In the end, as with cognitive and learning styles, it may not be important to label students' talents or intellectual strengths. It may be more important simply to provide important learning and knowledge in several modes or styles, ways that draw on more than one possible form of intelligence or skill. A good example of this principle is your own development in learning to teach. It is well and good to read books about teaching (like this one, perhaps), but it is even better to read books and talk with classmates and educators about teaching and getting actual experience in classrooms. The combination both invites and requires a wide range of your talents and usually proves more effective than any single type of activity, whatever your profile of cognitive styles or intellectual abilities happens to be.

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Extremes of Intelligence: Intellectual Disability and Giftedness

The results of studies assessing the measurement of intelligence show that IQ is distributed in the population in the form of a **Normal Distribution (or bell curve),** which *is the pattern of scores usually observed in a variable that clusters around its average*. In a normal distribution, the bulk of the scores fall toward the middle, with many fewer scores falling at the extremes. The normal distribution of intelligence shows that on IQ tests, as well as on most other measures, the majority of people cluster around the average (in this case, where IQ = 100), and fewer are either very smart or very dull. Because the standard deviation of an IQ test is about 15, this means that about 2% of people score above an IQ of 130,

often considered the threshold for giftedness, and about the same percentage score below an IQ of 70, often being considered the threshold for intellectual disability.

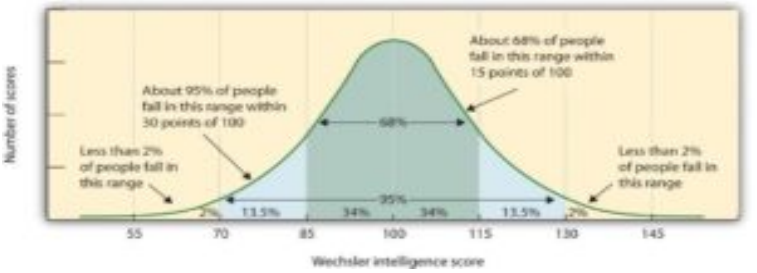


Figure 2. Distribution of IQ Scores in the General PopulationThe normal distribution of IQ scores in the general population shows that most people have about average intelligence, while very few have extremely high or extremely low intelligence.

Intellectual Disabilities

People with very low IQ define one end of the distribution of intelligence scores. **Intellectual disability** (or **intellectual developmental disorder**) is assessed based on cognitive capacity (IQ) and adaptive functioning. The severity of the disability is based on adaptive functioning, or how well the person handles everyday life tasks. About 1% of the United States population, most of them males, fulfill the criteria for intellectual developmental disorder, but some children who are given this diagnosis lose the classification as they get older and better learn to function in society.

Students with intellectual disabilities score poorly on standardized tests of intelligence. They may have limited language or impaired speech and may not perform well academically. Everyday tasks that most people take for granted, like getting

dressed or eating a meal, may be possible, but they may also take more time and effort than usual. Health and safety can sometimes be a concern (for example, knowing whether it is safe to cross a street). For older individuals, finding and keeping a job may require help from supportive others. The exact combination of challenges varies from one person to another, but it always (by definition) involves limitations in *both* intellectual and daily functioning.



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https://childpsychology.pressbooks.sunycreate.cloud/?p=85#oembed-6

Video 5. *Intellectual Disabilities* defines intellectual disabilities (ID), explains the characteristics, and how to support students with ID.

Levels of Support for Individuals with Intellectual Disabilities

Intellectual disabilities happen in different degrees or amounts, though most often are relatively mild. Traditionally the intensity or "amount" of the disability was defined by scores on a standardized test of scholastic aptitude (or "IQ test"), with lower scores indicating more severe disability. Because of the insensitivity of such tests to individuals' daily social functioning, however, current trends are toward defining intensities by the amount of support needed by the individual. Table 1 summarizes the most commonly used scheme for this purpose, one created by the American Association on Intellectual and Developmental Disabilities (AAMR, 2002). Levels of support range from *intermittent* (just occasional or "as needed" for specific activities) to *pervasive* (continuous in all realms of living).

Table 3. Levels and areas of support for intellectual disabilities

Level of support	Duration of support	Frequency of support	Setting of support	Amount of professional assistance
Intermittent	Only as needed	Occasional or infrequent	Usually only one or two (e.g. 1–2 classes or activities)	Occasional consultation or monitoring by professional
Limited	As needed, but sometimes continuing	Regular, but frequency varies	Several settings, but not usually all	Occasional or regular contact with professionals
Extensive	Usually continuing	Regular, but frequency varies	Several settings, but not usually all	Regular contact with professionals at least once a week
Pervasive	May be lifelong	Frequent or continuous	Nearly all settings	Continuous contact and monitoring by professionals

Source: American Association on Mental Retardation, 2002: Schalock & Luckassen, 2004.

As a classroom teacher, the intellectual disabilities that you are most likely to see are the ones requiring the least support in your classroom. A student requiring only intermittent support may require special help with some learning activities or classroom routines, but not others; he or she might need help with reading or putting on winter clothes, for example, but primarily on occasions when there is pressure to do these things relatively quickly. Students requiring somewhat more support are likely to spend somewhat less time in your classroom and more time receiving special help from other professionals, such as a special education teacher, a speech and language specialist, or an assistant to these professionals. These circumstances have distinct implications for ways of teaching these students.

Teaching Students with Intellectual Disabilities

There are many specific techniques that can help in teaching students with mild or moderate intellectual disabilities, but most can be summarized into three more general strategies. The first is to give more time and practice than usual; the second is to embed activities into the context of daily life or functioning where possible; and the third is to include the child both in social and in academic activities, rather than just one or the other. Let us look briefly at each of these ideas.

Giving More Time and Practice

If a student has a mild intellectual disability, they may be able to learn important fundamentals of the academic curriculum—basic arithmetic, for example, and basic reading. Because of the disability, though, the student may need more time or practice than most other students. They may be able to read many words by sight (*day*, *night*, *morning*, *afternoon*, etc.), but need longer than other students to recognize and say them. Or the student may know that 2 + 3 = 5, but need help applying this math fact to real objects; you (or a helper) might need to show the student that two *pencils* plus three *pencils* make five *pencils*.

Giving extra help takes time and perseverance, and can try the patience of the student (and of you, too). To deal with this problem, it may help to reward the student frequently for effort and successes with well-timed praise, especially if it is focused on specific, actual achievements; "You added that one correctly," may be more helpful than "You're a hard worker," even if both comments are true. Giving appropriate praise is in turn easier if you set reasonable, "do-able" goals by breaking skills or tasks into steps that the student is likely to learn without becoming overly discouraged. At the same time, it is important not to insult the student with

goals or activities that are *too* easy or by using curriculum materials clearly intended for children who are much younger. Setting expectations too low actually deprives a student with an intellectual disability of rightful opportunities to learn—a serious ethical and professional mistake (Bogdan, 2006). In many curriculum areas, fortunately, there already existing materials that are simplified, yet also appropriate for older students (Snell, et al., 2005). Special education teacher-specialists can often help in finding them and in devising effective ways of using them.

Adaptive and Functional Skills

Students with intellectual disabilities present especially clear examples of a universal dilemma of teaching: since there is not enough time to teach everything, how do we choose what to teach? One basis for selecting activities is to relate learning goals to students' everyday lives and activities, just as you would with all students. This strategy addresses the other defining feature of intellectual disability, the student's difficulties with adapting to and functioning in everyday living. In teaching addition and subtraction, for example, you can create examples about the purchasing of common familiar objects (e.g. food) and about the need to make or receive change for the purchases. Similar considerations apply to learning new reading or oral language vocabulary. Instead of simply learning words in a "basic reading" series (or reading textbook), try encouraging the student to learn words that are especially useful to the student's own life. Often the student, not you yourself, is the best person to decide what these words actually are.

An adaptive, functional approach can help in non-academic areas as well. In learning to read or "tell time" on a clock, for example, try focusing initially on telling the times important to the student, such as when he or she gets up in the morning or when school starts. As you add additional times that are personally meaningful to the student, he or she works gradually towards full knowledge of how

to read the hands on a clock. Even if the full knowledge proves slow to develop, however, the student will at least have learned the most useful clock knowledge first.

Include the Student in Group Activities

The keyword here is *inclusion*: the student should participate in and contribute to the life of the class as much as possible. This means that wherever possible, the student attends special events (assemblies, field days) with the class; that if the class plays a group game, then the student with the disability is part of the game; that if classmates do an assignment as a group, then if at all possible the student is assigned to one of the groups. The changes resulting from these inclusions are real, but can be positive for everyone. On the one hand, they foster acceptance and helpfulness toward the child with the disability; classmates learn that school is partly about providing opportunities for everyone, and not just about evaluating or comparing individuals' skills. On the other hand, the changes caused by inclusion stimulate the student with the disability to learn as much as possible from classmates, socially and academically. Among other benefits, group activities can give the student chances to practice "belonging" skills—how to greet classmates appropriately, or when and how to ask the teacher a question. These are skills that are beneficial for everyone to learn, disabled or not.

Gifted and Talented Students

Giftedness *refers to those who have an IQ of 130 or higher* (Lally & Valentine-French, 2015). Having an extremely high IQ is clearly less of a problem than having an extremely low IQ, but there may also be challenges to being particularly smart. It is often assumed that schoolchildren who are labeled as "gifted" may have adjustment

problems that make it more difficult for them to create social relationships. To study gifted children, Lewis Terman and his colleagues (Terman & Oden, 1959) selected about 1,500 high school students who scored in the top 1% on the Stanford-Binet and similar IQ tests (i.e., who had IQs of about 135 or higher), and tracked them for more than seven decades (the children became known as the "termites" and are still being studied today). This study found that these students were not unhealthy or poorly adjusted, but rather were above average in physical health and were taller and heavier than individuals in the general population. The students also had above-average social relationships and were less likely to divorce than the average person (Seagoe, 1975).

Terman's study also found that many of these students went on to achieve high levels of education and entered prestigious professions, including medicine, law, and science. Of the sample, 7% earned doctoral degrees, 4% earned medical degrees, and 6% earned law degrees. These numbers are all considerably higher than what would have been expected from a more general population. Another study of young adolescents who had even higher IQs found that these students ended up attending graduate school at a rate more than 50 times higher than that in the general population (Lubinski & Benbow, 2006).

As you might expect based on our discussion of intelligence, kids who are gifted have higher scores on general intelligence "g," but there are also different types of giftedness. Some children are particularly good at math or science, some at automobile repair or carpentry, some at music or art, some at sports or leadership, and so on. The idea of multiple intelligences leads to new ways of thinking about students who have special gifts and talents. More recently, however, the meaning of *gifted* has broadened to include unusual talents in a range of activities, such as music, creative writing, or the arts (G. Davis & Rimm, 2004). To indicate the change, educators often use the dual term *gifted and talented.*

Qualities of the Gifted and Talented

What are students who are gifted and talented like? Generally, they show some combination of the following qualities:

- They learn more quickly and independently than most students their own age.
- They often have well-developed vocabulary, as well as advanced reading and writing skills.
- They are very motivated, especially on tasks that are challenging or difficult.
- They hold themselves to higher than usual standards of achievement.

Contrary to a common impression, students who are gifted or talented are *not* necessarily awkward socially, less healthy, or narrow in their interests—in fact, quite the contrary (Steiner & Carr, 2003). They also come from all economic and cultural groups.

Ironically, in spite of their obvious strengths as learners, such students often languish in school unless teachers can provide them with more than the challenges of the usual curriculum. A kindergarten child who is precociously advanced in reading, for example, may make little further progress at reading if her teachers do not recognize and develop her skill; her talent may effectively disappear from view as her peers gradually catch up to her initial level. Without accommodation to their unusual level of skill or knowledge, students who are gifted or talented can become bored by school, and eventually the boredom can even turn into behavior problems.

Partly for these reasons, students who are gifted or talented have sometimes been regarded as the responsibility of special education, along with students with other sorts of disabilities. Often their needs are discussed, for example, in textbooks about special education, alongside discussions of students with intellectual disabilities, physical impairments, or major behavior disorders

(Friend, 2008). There is some logic to this way of thinking about their needs; after all, they *are* quite exceptional, and they do require modifications of the usual school programs in order to reach their full potential. But it is also misleading to ignore obvious differences between exceptional giftedness and exceptional disabilities of other kinds. The key difference is in students' potential. By definition, students with gifts or talents are capable of creative, committed work at levels that often approach talented adults. Other students—including students with disabilities—may reach these levels, but not as soon and not as frequently. Many educators, therefore, think of the gifted and talented not as examples of students with disabilities, but as examples of diversity. As such they are not so much the responsibility of special education specialists, as the responsibility of all teachers to differentiate their instruction.

Supporting Gifted and Talented Students

Supporting the gifted and talented usually involves a mixture of *acceleration* and *enrichment* of the usual curriculum (Schiever & Maker, 2003). **Acceleration** involves either a child's skipping a grade, or else the teacher's redesigning the curriculum within a particular grade or classroom so that more material is covered faster. Either strategy works, but only up to a point: children who have skipped a grade usually function well in the higher grade, both academically and socially. Unfortunately skipping grades cannot happen repeatedly unless teacher, parents, and the students themselves are prepared to live with large age and maturity differences within single classrooms. In itself, too, there is no guarantee that instruction in the new, higher-grade classroom will be any more stimulating than it was in the former, lower-grade classroom. Redesigning the curriculum is also beneficial to the student, but impractical to do on a widespread basis; even if teachers had the

time to redesign their programs, many non-gifted students would be left behind as a result.

Enrichment involves providing additional or different instruction added on to the usual curriculum goals and activities. Instead of books at more advanced reading levels, for example, a student might read a wider variety of types of literature at the student's current reading level, or try writing additional types of literature himself. Instead of moving ahead to more difficult kinds of math programs, the student might work on unusual logic problems not assigned to the rest of the class. Like acceleration, enrichment works well up to a point. Enrichment curricula exist to help classroom teachers working with gifted students (and save teachers the time and work of creating enrichment materials themselves). Since enrichment is not part of the normal, officially sanctioned curriculum, however, there is a risk that it will be perceived as busywork rather than as intellectual stimulation, particularly if the teacher herself is not familiar with the enrichment material or is otherwise unable to involve herself in the material fully.

Obviously acceleration and enrichment can sometimes be combined. A student can skip a grade and also be introduced to interesting "extra" material at the new grade level. A teacher can move a student to the next unit of study faster than she moves the rest of the class, while at the same time offering additional activities not related to the unit of study directly. For a teacher with a student who is gifted or talented, however, the real challenge is not simply to choose between acceleration and enrichment, but to observe the student, get to know him or her as a unique individual, and offer activities and supports based on that knowledge. This is essentially the challenge of differentiating instruction, something needed not just by the gifted and talented, but by students of all sorts. As you might suspect, differentiating instruction poses challenges about managing instruction.

There is a lively debate among scholars about whether it is appropriate or beneficial to label some children as "gifted and talented" in school and to provide them with accelerated special

classes and other programs that are not available to everyone. Although doing so may help the gifted kids (Colangelo & Assouline, 2009), it also may isolate them from their peers and make such provisions unavailable to those who are not classified as "gifted."



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Video 6. *Gifted and Talented Students: Teaching Strategies* suggests ways to support gifted students.

Education Issues

Often, we use the terms "schooling" and "education" interchangeably, but they have different meanings. Education is not solely concerned with the basic academic concepts that a student learns in the classroom. Education is a social institution through which a society's children are taught basic academic knowledge, learning skills, and cultural norms. Societies also educate their children outside of the school system in matters of everyday practical living. These two types of learning are referred to as formal education and informal education.

Formal education describes the learning of academic facts and concepts through a formal curriculum. Arising from the tutelage of ancient Greek thinkers, centuries of scholars have examined topics through formalized methods of learning. Education in earlier times was only available to the higher classes; they had the means for access to scholarly materials, plus the luxury of leisure time that could be used for learning. The Industrial Revolution and its accompanying social changes made education more accessible to the general population. Many families in the emerging middle class found new opportunities for schooling.

The modern U.S. educational system is the result of this progression. Today, basic education is considered a right and responsibility for all citizens. Expectations of this system focus on formal education, with curricula and testing designed to ensure that students learn the facts and concepts that society believes are basic knowledge.

In contrast, **informal education** describes learning about cultural values, norms, and expected behaviors by participating in society. This type of learning occurs both through the formal education system and at home. Our earliest learning experiences generally happen via parents, relatives, and others in our community. Through informal education, we learn how to dress for different

occasions, how to perform regular life routines like shopping for and preparing food, and how to keep our bodies clean.

The Functions of Schools

Schools teach us far more than reading, writing, and arithmetic. They also socialize us to cultural norms and expectations of our society. These cultural expectations and norms are reinforced by our teachers, our textbooks, and our classmates. (For students outside the dominant culture, this aspect of the education system can pose significant challenges.) You might remember learning your multiplication tables in second grade and also learning the social rules of taking turns on the swings at recess. You might recall learning about the U.S. Constitution in an American Government course as well as learning when and how to speak up in class.

Schools are one of the more important social institutions in a society and contribute to two kinds of functions: manifest (or primary) functions, which are the intended and visible functions of education; and latent (or secondary) functions, which are the hidden and unintended functions.

Manifest Functions of Education

There are several major manifest functions associated with education. The first is socialization. Beginning in preschool and kindergarten, students are taught to practice various societal roles. The French sociologist Émile Durkheim (1858–1917), who established the academic discipline of sociology, characterized schools as "socialization agencies that teach children how to get along with others and prepare them for adult economic roles" (Durkheim 1898).

Indeed, it seems that schools have taken on this responsibility in full.

This socialization also involves learning the rules and norms of society as a whole. In the early days of compulsory education, students learned the dominant culture. Today, since the culture of the United States is increasingly diverse, students may learn a variety of cultural norms, not only that of the dominant culture.

School systems in the United States also transmit the core values of the nation through manifest functions like social control. One of the roles of schools is to teach students conformity to law and respect for authority. Obviously, such respect, given to teachers and administrators, will help a student navigate the school environment. This function also prepares students to enter the workplace and the world at large, where they will continue to be subject to people who have authority over them. The fulfillment of this function rests primarily with classroom teachers and instructors who are with students all day.

Education also provides one of the major methods used by people for upward social mobility. This function is referred to as **social placement**. College and graduate schools are viewed as vehicles for moving students closer to careers that will give them the financial freedom and security they seek. As a result, college students are often more motivated to study areas that they believe will be advantageous on the social ladder. A student might value business courses over a class in Victorian poetry because she sees business class as a stronger vehicle for financial success.

Latent Functions of Education

Education also fulfills latent functions. As you well know, much goes on in a school that has little to do with formal education. For example, you might notice an attractive fellow student when he gives a particularly interesting answer in class—catching up with

him and making a date speaks to the latent function of courtship fulfilled by exposure to a peer group in the educational setting.

The educational setting introduces students to social networks that might last for years and can help people find jobs after their schooling is complete. Of course, with social media such as Facebook and LinkedIn, these networks are easier than ever to maintain. Another latent function is the ability to work with others in small groups, a skill that is transferable to a workplace, and that might not be learned in a homeschool setting.

The educational system, especially as experienced on university campuses, has traditionally provided a place for students to learn about various social issues. There is ample opportunity for social and political advocacy, as well as the ability to develop tolerance to the many views represented on campus. In 2011, the Occupy Wall Street movement swept across college campuses all over the United States, leading to demonstrations in which diverse groups of students were unified with the purpose of changing the political climate of the country.

Another role of schools, according to functionalist theory, is that of **sorting** or classifying students based on academic merit or potential. The most capable students are identified early in schools through testing and classroom achievements. Such students are placed in accelerated programs in anticipation of successful college attendance.

School, particularly in recent years, is taking over some of the functions that were traditionally undertaken by family. Society relies on schools to teach about human sexuality as well as basic skills such as budgeting and job applications—topics that at one time, were addressed by the family.

Table 1. Manifest and Latent Functions of Education

Manifest Functions: Openly stated functions with intended goals	**Latent Functions: Hidden, unstated functions with sometimes unintended consequences**
Socialization	Courtship
Transmission of culture	Social networks
Social control	Working in groups
Social placement	Creation of generation gap
Cultural innovation	Political and social integration

Student Diversity

Diversity means different things to different people, and it can be understood differently in different environments. In the context of education, diversity generally refers to the differences among people in the school environment by race, culture, ethnicity, religion, socioeconomic status, sexual orientation, abilities, opinions, political views, and in other ways. We also think about how groups interact with one another, given their differences (even if they're just perceived differences.) How do diverse populations experience and explore their relationships?

Students have, of course, always been diverse. Whether in the past or in the present day, students learn at unique paces, show unique personalities, and learn in their own ways. In recent decades, though, the forms and extent of diversity have increased. Now more than ever, teachers are likely to serve students from diverse language backgrounds, to serve more individuals with special educational needs, and to teach students either younger and older than in the past.

Cultural and Language Diversity

Take the case of language diversity. In the United States, about 40 million people, or 14% of the population are Hispanic. About 20% of these speak primarily Spanish, and approximately another 50% speak only limited English (United States Census Bureau, 2005). The educators responsible for the children in this group need to accommodate instruction to these students somehow. Part of the solution, of course, is to arrange specialized second-language teachers and classes. But adjustment must also happen in "regular" classrooms of various grade levels and subjects. Classroom teachers must learn to communicate with students whose English language background is limited, at the same time that the students themselves are learning to use English more fluently (Pitt, 2005). Since relatively few teachers are Hispanic or speak fluent Spanish, the adjustments can sometimes be a challenge. Teachers must plan lessons and tasks that students actually understand. At the same time, teachers must also keep track of the major learning goals of the curriculum.

- Cultures and ethnic groups differ not only in languages but also in how languages are used. Since some of the patterns differ from those typical of modern classrooms, they can create misunderstandings between teachers and students (Cazden, 2001; Rogers et al., 2005). Consider these examples:
- In some cultures, it is considered polite or even intelligent not to speak unless you have something truly important to say. Chitchat, or talk that simply affirms a personal tie between people, is considered immature or intrusive (Minami, 2002). In a classroom, this habit can make it easier for a child to learn not to interrupt others, but it can also make the child seem unfriendly.
- Eye contact varies by culture. In many African American and Latin American communities, it is considered appropriate and

respectful for a child not to look directly at an adult who is speaking to them (Torres-Guzman, 1998). In classrooms, however, teachers often expect a lot of eye contact (as in "I want all eyes on me!") and may be tempted to construe a lack of eye contact as a sign of indifference or disrespect.

- Social distance varies by culture. In some cultures, it is common to stand relatively close when having a conversation; in others, it is more customary to stand relatively far apart (Beaulieu, 2004). Problems may happen when a teacher and student prefer different social distances. A student who expects a closer distance than does the teacher may seem overly familiar or intrusive, whereas one who expects a longer distance may seem overly formal or hesitant.
- Wait time varies by culture. Wait time is the gap between the end of one person's comment or question and the next person's reply or answer. In some cultures, wait time is relatively long, as long as three or four seconds (Tharp & Gallimore, 1989). In others, it is a negative gap, meaning that it is acceptable, even expected, for a person to interrupt before the end of the previous comment. In classrooms, the wait time is customarily about one second; after that, the teacher is likely to move on to another question or to another student. A student who habitually expects a wait time longer than one second may seem hesitant, and not be given many chances to speak. A student who expects a negative wait time, on the other hand, may seem overeager or even rude.
- In most non-Anglo cultures, questions are intended to gain information, and it is assumed that a person asking the question truly does not have the information requested (Rogoff, 2003). In most classrooms, however, teachers regularly ask test questions, which are questions to which the teacher already knows the answer, and that simply assess whether a student knows the answer as well (Macbeth, 2003). The question: "How much is 2 + 2?" for example, is a test question. If the student is not aware of this purpose, he or she may

become confused, or think that the teacher is surprisingly ignorant. Worse yet, the student may feel that the teacher is trying deliberately to shame the student by revealing the student's ignorance or incompetence to others.

- Preference for activities that are cooperative rather than competitive. Many activities in school are competitive, even when teachers try to de-emphasize the competition. Once past the first year or second year of school, students often become attentive to who receives the highest marks on an assignment, for example, or who is the best athlete at various sports or whose contributions to class discussions gets the most verbal recognition from the teacher (Johnson & Johnson, 1998). A teacher deliberately organizes important activities or assignments competitively, as in "Let's see who finishes the math sheet first." Classroom life can then become explicitly competitive, and the competitive atmosphere can interfere with cultivating supportive relationships among students or between students and the teacher (Cohen, 2004). For students who give priority to these relationships, competition can seem confusing at best and threatening at worst. A student may wonder, "What sort of sharing or helping with answers is allowed?" The answer to this question may be different depending on the cultural background of the student and teacher. What the student views as cooperative sharing may be seen by the teacher as laziness, freeloading, or even cheating.

Diversity of Special Educational Needs

Another factor making classrooms increasingly diverse has been the inclusion of students with disabilities into classrooms with non-disabled peers. In the United States, the trend began in the 1970s, but accelerated with the passage of the Individuals with Disabilities Education Act in 1975, and again when the Act was amended in

2004 (United States Government Printing Office, 2005). The law guarantees free, appropriate education for children with disabilities of any kind—whether the impairment is physical, cognitive, emotional, or behavioral. The laws also recognize that such students need special supports in order to learn or function effectively in a classroom with non-disabled peers, so they provide for special services (for example, teaching assistants) and procedures for making individualized educational plans for students with disabilities.

Children with Disabilities: Legislation

Since the 1970s, political and social attitudes have moved increasingly toward including people with disabilities in a wide variety of "regular" activities. In the United States, the shift is illustrated clearly in the Federal legislation that was enacted during this time. Three major laws were passed that guaranteed the rights of persons with disabilities, and of children and students with disabilities in particular. The third law has had the biggest impact on education.

Rehabilitation Act of 1973, Section 504: This law, the first of its kind, required that individuals with disabilities be accommodated in any program or activity that receives Federal funding (PL 93-112, 1973). Although this law was not intended specifically for education, in practice, it has protected students' rights in some extra-curricular activities (for older students) and in some child care or after-school care programs (for younger students). If those programs receive Federal funding of any kind, the programs are not allowed to exclude children or youths with disabilities, and they have to find reasonable ways to accommodate the individuals' disabilities.

Americans with Disabilities Act of 1990 (or ADA): This legislation also prohibited discrimination on the basis of disability, just as Section 504 of the Rehabilitation Act had done (PL 101-336, 1990).

Although the ADA also applies to all people (not just to students), its provisions are more specific and "stronger" than those of Section 504. In particular, ADA extends to all employment and jobs, not just those receiving Federal funding. It also specifically requires accommodations to be made in public facilities such as with buses, restrooms, and telephones. ADA legislation is therefore responsible for some of the "minor" renovations in schools that you may have noticed in recent years, like wheelchair-accessible doors, ramps, and restrooms, and public telephones with volume controls.

Individuals with Disabilities Education Act (or IDEA): As its name implied, this legislation was more focused on education than either Section 504 or ADA. It was first passed in 1975 and has been amended several times since, including most recently in 2004 (PL 108-446, 2004). To be eligible under IDEA, a student must be adversely affected in oral expression, listening comprehension, written expression, basic reading skills, reading fluency skills, reading comprehension, mathematics calculation, or mathematics problem-solving. In its current form, the law guarantees the following rights related to education for anyone with a disability from birth to age 21. The first two influence schooling in general, but the last three affect the work of classroom teachers rather directly:

- *Free, appropriate education*: An individual or an individual's family should not have to pay for education simply because the individual has a disability, and the educational program should be truly educational; i.e., not merely care-taking or babysitting the person.
- *Due process*: In case of disagreements between an individual with a disability and the schools or other professionals, there must be procedures for resolving the disagreements that are fair and accessible to all parties, including the person himself or herself or the person's representative.
- *Fair evaluation of performance in spite of disability*: Tests or other evaluations should not assume test-taking skills that a person with a disability cannot reasonably be expected to

have, such as holding a pencil, hearing or seeing questions, working quickly, or understanding and speaking orally. Evaluation procedures should be modified to allow for these differences. This provision of the law applies both to evaluations made by teachers and to school-wide or "high-stakes" testing programs.

- *Education in the "least restrictive environment"*: Education for someone with a disability should provide as many educational opportunities and options for the person as possible, both in the short term and in the long term. In practice, this requirement has meant including students in regular classrooms and school activities as much as possible, though often not totally.
- *An individualized educational program*: Given that every disability is unique, instructional planning for a person with a disability should be unique or individualized as well. In practice, this provision has led to classroom teachers planning individualized programs jointly with other professionals (like reading specialists, psychologists, or medical personnel) as part of a team.

Students with Disabilities

Students are eligible for the rights afforded under the IDEA if their academic achievement is being impacted due to a learning disability, autism spectrum disorder, visual or hearing impairment, orthopedic impairment, traumatic brain injury, speech or language impairment, intellectual disability, emotional disturbance, or other health impairment.

Learning Disabilities

A **Learning Disability** (or LD) is a specific impairment of academic learning that interferes with a specific aspect of schoolwork, and that reduces a student's academic performance significantly. An LD shows itself as a major discrepancy between a student's ability

and some feature of achievement: The student may be delayed in reading, writing, listening, speaking, or doing mathematics, but not in all of these at once. A learning problem is not considered a learning disability if it stems from physical, sensory, or motor handicaps, or from generalized intellectual impairment. It is also not an LD if the learning problem really reflects the challenges of learning English as a second language. Genuine LDs are the learning problems left over after these other possibilities are accounted for or excluded. Typically, a student with an LD has not been helped by teachers' ordinary efforts to assist the student when he or she falls behind academically, though what counts as an "ordinary effort," of course, differs among teachers, schools, and students. Most importantly, though, an LD relates to a fairly specific area of academic learning. A student may be able to read and compute well enough, for example, but not be able to write. LDs are by far the most common form of special educational need, accounting for half of all students with special needs in the United States and anywhere from 5 to 20% of all students, depending on how the numbers are estimated (United States Department of Education, 2005; Ysseldyke & Bielinski, 2002). Students with LDs are so common, in fact, that most teachers regularly encounter at least one per class in any given school year, regardless of the grade level they teach.

These difficulties are identified in school because this is when children's academic abilities are being tested, compared, and measured. Consequently, once academic testing is no longer essential in that person's life (as when they are working rather than going to school), these disabilities may no longer be noticed or relevant, depending on the person's job and the extent of the disability.

https://youtu.be/RKCNqHEzLwQ

Video 1. *Learning Disability* explains the different types of disabilities and their symptoms.

Dyslexia is one of the most commonly diagnosed disabilities and involves having difficulty in the area of reading. This diagnosis is used for a number of reading difficulties. Common characteristics

are difficulty with phonological processing, which includes the manipulation of sounds, spelling, and rapid visual/verbal processing. Additionally, the child may reverse letters, have difficulty reading from left to right, or may have problems associating letters with sounds. It appears to be rooted in neurological problems involving the parts of the brain active in recognizing letters, verbally responding, or being able to manipulate sounds. Recent studies have identified a number of genes that are linked to developing dyslexia (National Institute of Neurological Disorders and Stroke, 2016). Treatment typically involves altering teaching methods to accommodate the person's particular problematic area.

Dysgraphia, a writing disability, is often associated with dyslexia (Carlson, 2013). There are different types of dysgraphia, including phonological dysgraphia, when the person cannot sound out words and write them phonetically. Orthographic dysgraphia is demonstrated by those individuals who can spell regularly spelled words, but not irregularly spelled ones. Some individuals with dysgraphia experience difficulties in motor control and experience trouble forming letters when using a pen or pencil.

Dyscalculia refers to problems in math. Cowan and Powell (2014) identified several terms used when describing difficulties in mathematics, including dyscalculia, mathematical learning disability, and mathematics disorder. All three terms refer to students with average intelligence who exhibit poor academic performance in mathematics. When evaluating a group of third graders, Cowan and Powell (2014) found that children with dyscalculia demonstrated problems with working memory, reasoning, processing speed, and oral language, all of which are referred to as domain-general factors. Additionally, problems with multi-digit skills, including number system knowledge, were also exhibited.



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Autism Spectrum Disorder

Autism spectrum disorder (ASD) is probably the most misunderstood and puzzling of neurodevelopmental disorders. Children with this disorder show signs of significant disturbances in three main areas: (a) deficits in social interaction, (b) deficits in communication, and (c) repetitive patterns of behavior or interests. These disturbances appear early in life and cause serious impairments in functioning (APA, 2013). The child with autism spectrum disorder might exhibit deficits in social interaction by not initiating conversations with other children or turning their head away when spoken to. These children do not make eye contact with others and seem to prefer playing alone rather than with others. In a certain sense, it is almost as though these individuals live in a personal and isolated social world others are simply not privy to or able to penetrate. Communication deficits can range from a complete lack of speech to one-word responses (e.g., saying "Yes" or "No" when replying to questions or statements that require additional elaboration), echoed speech (e.g., parroting what another person says, either immediately or several hours or even days later), to difficulty maintaining a conversation because of an inability to reciprocate others' comments. These deficits can also include problems in using and understanding nonverbal cues (e.g., facial expressions, gestures, and postures) that facilitate normal communication.

Repetitive patterns of behavior or interests can be exhibited in a number of ways. The child might engage in stereotyped, repetitive

movements (rocking, head-banging, or repeatedly dropping an object and then picking it up), or she might show great distress at small changes in routine or the environment. For example, the child might throw a temper tantrum if an object is not in its proper place or if a regularly- scheduled activity is rescheduled. In some cases, the person with autism spectrum disorder might show highly restricted and fixated interests that appear to be abnormal in their intensity. For instance, the child might learn and memorize every detail about something, even though doing so serves no apparent purpose. Importantly, autism spectrum disorder is not the same thing as intellectual disability, although these two conditions can occur together. The DSM-5 specifies that the symptoms of autism spectrum disorder are not caused or explained by intellectual disability.

The qualifier "spectrum" in autism spectrum disorder is used to indicate that individuals with the disorder can show a range, or spectrum, of symptoms that vary in their magnitude and severity: Some severe, others less severe. The previous edition of the DSM included a diagnosis of Asperger's disorder, generally recognized as a less severe form of autistic disorder; individuals diagnosed with Asperger's disorder were described as having average or high intelligence and strong vocabulary, but exhibiting impairments in social interaction and social communication, such as talking only about their special interests (Wing, Gould, & Gillberg, 2011). However, because research has failed to demonstrate that Asperger's disorder differs qualitatively from autistic disorder, the DSM-5 does not include it. Some individuals with autism spectrum disorder, particularly those with better language and intellectual skills, can live and work independently as adults. However, most do not because the symptoms remain sufficient to cause serious impairment in many realms of life (APA, 2013).

Currently, estimates indicate that nearly 1 in 88 children in the United States have autism spectrum disorder; the disorder is 5 times more common in boys (1 out of 54) than girls (1 out of 252) (CDC, 2012). Rates of autistic spectrum disorder have increased

dramatically since the 1980s. For example, California saw an increase of 273% in reported cases from 1987 through 1998 (Byrd, 2002); between 2000 and 2008, the rate of autism diagnoses in the United States increased 78% (CDC, 2012). Although it is difficult to interpret this increase, it is possible that the rise in prevalence is the result of the broadening of the diagnosis, increased efforts to identify cases in the community, and greater awareness and acceptance of the diagnosis. In addition, mental health professionals are now more knowledgeable about autism spectrum disorder and are better equipped to make the diagnosis, even in subtle cases (Novella, 2008).

The exact causes of autism spectrum disorder remain unknown despite massive research efforts over the last two decades (Meek, Lemery-Chalfant, Jahromi, & Valiente, 2013). Autism appears to be strongly influenced by genetics, as identical twins show concordance rates of 60%– 90%, whereas concordance rates for fraternal twins and siblings are 5%–10% (Autism Genome Project Consortium, 2007). Many different genes and gene mutations have been implicated in autism (Meek et al., 2013). Among the genes involved are those important in the formation of synaptic circuits that facilitate communication between different areas of the brain (Gauthier et al., 2011). A number of environmental factors are also thought to be associated with increased risk for autism spectrum disorder, at least in part, because they contribute to new mutations. These factors include exposure to pollutants, such as plant emissions and mercury, urban versus rural residence, and vitamin D deficiency (Kinney, Barch, Chayka, Napoleon, & Munir, 2009).

There is no scientific evidence that a link exists between autism and vaccinations (Hughes, 2007). Indeed, a recent study compared the vaccination histories of 256 children with autism spectrum disorder with that of 752 control children across three time periods during their first two years of life (birth to 3 months, birth to 7 months, and birth to 2 years) (DeStefano, Price, & Weintraub, 2013). At the time of the study, the children were between 6 and 13 years old, and their prior vaccination records were obtained. Because

vaccines contain immunogens (substances that fight infections), the investigators examined medical records to see how many immunogens children received to determine if those children who received more immunogens were at greater risk for developing autism spectrum disorder. The results of this study clearly demonstrated that the number of immunogens from vaccines received during the first two years of life was not at all related to the development of autism spectrum disorder.



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https://childpsychology.pressbooks.sunycreate.cloud/?p=86#oembed-2

Video 2. *Autism Spectrum Disorder* discusses the range of symptoms associated with ASD.

Other Health Impairment

Attention Deficit Hyperactivity Disorder (ADHD) is not a learning disability but can be considered as an 'other health impairment' if it is impacting academic performance. Individuals with ADHD show a constant pattern of inattention and/or hyperactive and impulsive behavior that interferes with normal functioning (American Psychological Association (APA), 2013). Some of the signs of inattention include great difficulty with, and avoidance of, tasks that require sustained attention (such as conversations or reading), failure to follow instructions (often resulting in failure to complete schoolwork and other duties), disorganization (difficulty keeping things in order, poor time management, sloppy and messy work), lack of attention to detail, becoming easily distracted, and forgetfulness. Hyperactivity is characterized by excessive movement, and includes fidgeting or

squirming, leaving one's seat in situations when remaining seated is expected, having trouble sitting still (e.g., in a restaurant), running about and climbing on things, blurting out responses before another person's question or statement has been completed, difficulty waiting one's turn for something, and interrupting and intruding on others. Frequently, the hyperactive child comes across as noisy and boisterous. The child's behavior is hasty, impulsive, and seems to occur without much forethought; these characteristics may explain why adolescents and young adults diagnosed with ADHD receive more traffic tickets and have more automobile accidents than do others their age (Thompson, Molina, Pelham, & Gnagy, 2007).

ADHD occurs in about 5% of children (APA, 2013). On average, boys are 3 times more likely to have ADHD than are girls; however, such findings might reflect the greater propensity of boys to engage in aggressive and antisocial behavior and thus incur a greater likelihood of being referred to psychological clinics (Barkley, 2006). Children with ADHD face severe academic and social challenges. Compared to their non-ADHD counterparts, children with ADHD have lower grades and standardized test scores and higher rates of expulsion, grade retention, and dropping out (Loe & Feldman, 2007). They also are less well-liked and more often rejected by their peers (Hoza et al., 2005).



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Video 3. *Attention Deficit Hyperactivity Disorder* explains the symptoms associated with the three types of ADHD.

Is the prevalence rate of ADHD increasing? Many people believe

that the rates of ADHD have increased in recent years, and there is evidence to support this contention. In a recent study, investigators found that the parent-reported prevalence of ADHD among children (4–17 years old) in the United States increased by 22% during a 4-year period, from 7.8% in 2003 to 9.5% in 2007 (CDC, 2010). ADHD may be over-diagnosed by doctors who are too quick to medicate children as behavior treatment. There is also greater awareness of ADHD now than in the past. Nearly everyone has heard of ADHD, and most parents and teachers are aware of its key symptoms. Thus, parents may be quick to take their children to a doctor if they believe their child possesses these symptoms, or teachers may be more likely now than in the past to notice the symptoms and refer the child for evaluation.

ADHD can persist into adolescence and adulthood (Barkley, Fischer, Smallish, & Fletcher, 2002). A recent study found that 29.3% of adults who had been diagnosed with ADHD decades earlier still showed symptoms (Barbaresi et al., 2013). Somewhat troubling, this study also reported that nearly 81% of those whose ADHD persisted into adulthood had experienced at least one other comorbid disorder, compared to 47% of those whose ADHD did not persist. Additional concerns when an adult has ADHD include worse educational attainment, lower socioeconomic status, less likely to be employed, more likely to be divorced, and more likely to have non-alcohol-related substance abuse problems (Klein et al., 2012).

Family and twin studies indicate that genetics play a significant role in the development of ADHD. Burt (2009), in a review of 26 studies, reported that the median rate of concordance for identical twins was .66, whereas the median concordance rate for fraternal twins was .20. The specific genes involved in ADHD are thought to include at least two that are important in the regulation of the neurotransmitter dopamine (Gizer, Ficks, & Waldman, 2009), suggesting that dopamine may be important in ADHD. Indeed, medications used in the treatment of ADHD, such as methylphenidate (Ritalin) and amphetamine with dextroamphetamine (Adderall), have stimulant qualities and elevate

dopamine activity. People with ADHD show less dopamine activity in key regions of the brain, especially those associated with motivation and reward (Volkow et al., 2009), which provides support to the theory that dopamine deficits may be a vital factor in the development this disorder (Swanson et al., 2007).

Brain imaging studies have shown that children with ADHD exhibit abnormalities in their frontal lobes, an area in which dopamine is in abundance. Compared to children without ADHD, those with ADHD appear to have smaller frontal lobe volume, and they show less frontal lobe activation when performing mental tasks. Recall that one of the functions of the frontal lobes is to inhibit our behavior. Thus, abnormalities in this region may go a long way toward explaining the hyperactive, uncontrolled behavior of ADHD.

Many parents attribute their child's hyperactivity to sugar. A statistical review of 16 studies, however, concluded that sugar consumption has no effect at all on the behavioral and cognitive performance of children (Wolraich, Wilson, & White, 1995). Additionally, although food additives have been shown to increase hyperactivity in non-ADHD children, the effect is rather small (McCann et al., 2007). Numerous studies, however, have shown a significant relationship between exposure to nicotine in cigarette smoke during the prenatal period and ADHD (Linnet et al., 2003). Maternal smoking during pregnancy is associated with the development of more severe symptoms of the disorder (Thakur et al., 2013).

Recommended treatment for ADHD includes behavioral interventions, cognitive behavioral therapy, parent and teacher education, recreational programs, and lifestyle changes, such as getting more sleep (Clay, 2013). For some children, medication is prescribed. Parents are often concerned that stimulant medication may result in their child acquiring a substance use disorder. However, research using longitudinal studies has demonstrated that children diagnosed with ADHD who received pharmacological treatment had a lower risk for substance abuse problems than those

children who did not receive medication (Wilens, Fararone, Biederman, & Gunawardene, 2003). The risk of substance abuse problems appears to be even greater for those with ADHD who are un-medicated and also exhibit antisocial tendencies (Marshal & Molina, 2006).



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https://childpsychology.pressbooks.sunycreate.cloud/?p=86#oembed-4

Understanding Learning Difficulties

https://video.alexanderstreet.com/embed/richard-lavoie-how-difficult-can-this-be-f-a-t-city-a-learning-disabilities-workshop?account_id=6155&usage_group_id=116666

Video 1. *How Difficult Can This Be? The F.A.T. City Workshop* depicts a series of simulations to help non-learning disabled people understand what it is like to have learning difficulties. Rick Lavoie also provides suggestions for how to help students facing these challenges.

Questions

Below are several questions to help guide your learning while you watch the video.

Introduction

What does F.A.T stand for in this video?

Anxiety

What is a typical reaction humans have when experiencing anxiety? What do we insist kids do when they respond in this way?

Processing

When the teacher asks a question how are mainstream and learning disabled (LD) children different in processing that questions?

Risk-Taking

How do we unintentionally decrease the likelihood of LD students from taking risks?

Visual Perception

Can we motivate LD children to "try harder" when something is too difficult? Why or why not?

Reading Comprehension

Reading comprehension has more to do with _____, not vocabulary!

Effects of Perception on Behavior

Why do LD students often say "I didn't do anything wrong" or "I don't know what I did" when they get into trouble?

Visual-Motor Coordination

How does difficulty with visual-motor integration effect some LD students?

Oral Expression

What is dysnomia? Why are LD students more likely to experience high rates of this?

Reading & Decoding

Children that are able to decode words to read may not be comprehending what is read. What explanation does the video offer for why this happens?

Auditory-Visual Capability

Why do books on tape benefit some LD students?

Fairness

According to the video, what is fairness?

Commentary

What were some of the effects that the participants reported feeling during this simulation? Is this a fair representation as to what LD students may experience?

Academic Achievement

Academic achievement is predicted by interpersonal (e.g., parental engagement in adolescents' education), intrapersonal (e.g., intrinsic motivation), and institutional (e.g., school quality) factors. Academic achievement is important in its own right as a marker of positive adjustment during adolescence but also because academic achievement sets the stage for future educational and occupational opportunities. The most serious consequence of school failure, particularly dropping out of school, is the high risk of unemployment or underemployment in adulthood that follows. High achievement can set the stage for college or future vocational training and opportunities.

Parental Engagement with School

Parents vary in their level of involvement with their children's schools. Teachers often complain that they have difficulty getting parents to participate in their child's education and devise a variety of techniques to keep parents in touch with daily and overall progress. For example, parents may be required to sign a behavior chart each evening to be returned to school or may be given information about the school's events through websites and newsletters. There are other factors that need to be considered when looking at parental involvement. To explore these, first, ask yourself if all parents who enter the school with concerns about their child be received in the same way?

Horvat (2004) found that teachers seek a particular type of involvement from particular types of parents. While teachers thought they were open and neutral in their responses to parental involvement, in reality, teachers were most receptive to support, praise, and agreement coming from parents who were most similar

in race and social class with the teachers. Parents who criticized the school or its policies were less likely to be given a voice. Parents who have higher levels of income, occupational status, and other qualities favored in society have **family capital.** This is a form of power that can be used to improve a child's education. Parents who do not have these qualities may find it more difficult to be effectively involved. The authors suggest that teachers closely examine their biases against parents. Schools may also need to examine their ability to dialogue with parents about school policies in more open ways. Any efforts to improve effective parental involvement should address these concerns.

Motivation to Achieve

Motivation varies and is demonstrated by the kind of goals that students set for themselves, and by how the goals support students' academic achievement. As you might suspect, some goals encourage academic achievement more than others, but even motives that do not concern academics explicitly tend to affect learning indirectly.

What kinds of achievement goals do students hold? Some students' goal may be to learn the material as well as possible because they find it interesting and because they believe it will be useful later—this is a mastery goal because they want primarily to learn or master the material. Other students are concerned less about learning the content than about getting high grades in the course—this is a performance goal because the focus is primarily on looking successful by performing well in the eyes of peers and teachers. There may also be students that are primarily concerned about avoiding a poor or failing mark—this is a performance-avoidance goal because they are not really as concerned about learning or about competitive success but is simply intending to avoid failure.

As you might imagine, mastery, performance, and performance-avoidance goals often are not experienced in pure form, but in combinations. If you play the clarinet in the school band, you might want to improve your technique simply because you enjoy playing as well as possible—essentially a mastery orientation. But you might also want to look talented in the eyes of classmates—a performance orientation. Another part of what you may wish, at least privately, is to avoid looking like a complete failure at playing the clarinet. One of these motives may predominate over the others, but they all may be present.

Mastery goals tend to be associated with the enjoyment of learning the material at hand, and in this sense, represent an outcome that teachers often seek for students. By definition, therefore, they are a form of **intrinsic motivation**. As such, mastery goals have been found to be better than performance goals at sustaining students' interest in a subject. In one review of research about learning goals, for example, students with primarily mastery orientations toward a course they were taking not only tended to express greater interest in the course, but also continued to express interest well beyond the official end of the course, and to enroll in further courses in the same subject (Harackiewicz, et al., 2002; Wolters, 2004).



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Video 1. *Instincts, Arousal, Needs, and Drives: Drive-Reduction and Cognitive Theories* explain some intrinsic motivations.

Performance goals, on the other hand, imply **extrinsic motivation**

and tend to show the mixed effects of this orientation. A positive effect is that students with a performance orientation do tend to get higher grades than those who express primarily a mastery orientation. The advantage in grades occurs both in the short term (with individual assignments) and in the long term (with overall grade point average when graduating). But there is evidence that performance-oriented students do not actually learn the material as deeply or permanently as students who are more mastery-oriented (Midgley, Kaplan, & Middleton, 2001). A possible reason is that measures of performance—such as test scores—often reward relatively shallow memorization of information and therefore guide performance-oriented students away from processing the information thoughtfully or deeply. Another possible reason is that a performance orientation, by focusing on gaining recognition as the best among peers, encourages competition among peers. Giving and receiving help from classmates is thus not in the self-interest of a performance-oriented student, and the resulting isolation limits the student's learning.



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https://childpsychology.pressbooks.sunycreate.cloud/?p=88#oembed-2

Video 2. *Incentive Theory* explains extrinsic motivation.

As we mentioned, failure-avoidant goals by nature undermine academic achievement. Often they are a negative byproduct of the competitiveness of performance goals (Urdan, 2004). If a teacher (and sometimes also fellow students) put too much emphasis on being the best in the class, and if interest in learning the material as such therefore suffers, then some students may decide that success

is beyond their reach or may not be desirable in any case. The alternative—simply avoiding failure—may seem wiser as well as more feasible. Once a student adopts this attitude, he or she may underachieve more or less deliberately, doing only the minimum work necessary to avoid looking foolish or to avoid serious conflict with the teacher. Avoiding failure in this way is an example of **self-handicapping**—deliberate actions and choices that reduce the chances of success. Students may self-handicap in a number of ways; in addition to not working hard, they may procrastinate about completing assignments, for example, or set goals that are unrealistically high.

The Wold of School

Remember Urie Brofenbrenner's **ecological systems model** we learned about when we first examined theories of development? This model helps us understand an individual by examining the contexts in which the person lives and the direct and indirect influences on that person's life. School becomes a very important component of children's lives during middle childhood and one way to understand children is to look at the world of school. We have discussed educational policies that impact the curriculum in schools above. Now let's focus on the school experience from the standpoint of the student, the teacher and parent relationship, and the cultural messages or hidden curriculum taught in schools in the United States.

Parents vary in their level of involvement with their children's schools. Teachers often complain that they have difficulty getting parents to participate in their child's education and devise a variety of techniques to keep parents in touch with daily and overall progress. For example, parents may be required to sign a behavior chart each evening to be returned to school or may be given information about the school's events through websites and

newsletters. There are other factors that need to be considered when looking at parental involvement. To explore these, first, ask yourself if all parents who enter the school with concerns about their child are received in the same way? If not, what would make a teacher or principal more likely to consider the parent's concerns? What would make this less likely?

Lareau and Horvat (2004) found that teachers seek a particular type of involvement from particular types of parents. While teachers thought they were open and neutral in their responses to parental involvement, in reality, teachers were most receptive to support, praise, and agreement coming from parents who were most similar in race and social class with the teachers. Parents who criticized the school or its policies were less likely to be given a voice. Parents who have higher levels of income, occupational status, and other qualities favored in society have family capital. This is a form of power that can be used to improve a child's education. Parents who do not have these qualities may find it more difficult to be effectively involved. Lareau and Horvat (2004) offer three cases of African-American parents who were each concerned about discrimination in the schools. Despite evidence that such discrimination existed, their children's white, middle-class teachers were reluctant to address the situation directly. Note the variation in approaches and outcomes for these three families:

- The Williams family: This working-class, African-American couple, a minister and a hairstylist, voiced direct complaints about discrimination in the schools. Their claims were thought to undermine the authority of the school and as a result, their daughter was kept in a lower reading class. However, her grade was boosted to "avoid a scene" and the parents were not told of this grade change.
- The Irving family: This middle-class, African-American couple was concerned that the school was discriminating against black students. They fought against it without using direct confrontation by staying actively involved in their daughter's

schooling and making frequent visits to the school to make sure that discrimination could not occur. They also talked with other African-American teachers and parents about their concerns.

- Ms. Caldron: This poor, single-parent was concerned about discrimination in the school. She was a recovering drug addict receiving welfare. She did not discuss her concerns with other parents because she did not know the other parents and did not monitor her child's progress or get involved with the school. She felt that her concerns would not receive attention. She requested spelling lists from the teacher on several occasions but did not receive them. The teacher complained that Ms. Caldron did not sign forms that were sent home for her signature.

Working within the system without direct confrontation seemed to yield better results for the Irvings, although the issue of discrimination in the school was not completely addressed. Ms. Caldron was the least involved and felt powerless in the school setting. Her lack of family capital and lack of knowledge and confidence keep her from addressing her concerns with the teachers. What do you think would happen if she directly addressed the teachers and complained about discrimination? Chances are, she would be dismissed as undermining the authority of the school, just as the Masons, and might be thought to lack credibility because of her poverty and drug addiction. The authors of this study suggest that teachers closely examine their biases against parents. Schools may also need to examine their ability to dialogue with parents about school policies in more open ways. What happens when parents have concerns over school policy or view student problems as arising from flaws in the educational system? How are parents who are critical of the school treated? And are their children treated fairly even when the school is being criticized? Certainly, any efforts to improve effective parental involvement should address these concerns.

Student Perspectives

Imagine being a 3rd-grader for one day in public school. What would the daily routine involve? To what extent would the institution dictate the activities of the day and how much of the day would you spend on those activities? Would you always be on task? What would you say if someone asked you how your day went? or "What happened in school today?" Chances are, you would be more inclined to talk about whom you sat at lunch with or who brought a puppy to class than to describe how fractions are added.

Ethnographer and Professor of Education Peter McLaren (1999) describes the student's typical day as filled with constrictive and unnecessary ritual that has a damaging effect on the desire to learn. Students move between various states as they negotiate the demands of the school system and their own personal interests. The majority of the day (298 minutes) takes place in the **student state**. This state is one in which the student focuses on a task or tries to stay focused on a task, is passive, compliant, and often frustrated. Long pauses before getting out the next book or finding materials sometimes indicate that frustration. The **street corner state** is one in which the child is playful, energetic, excited, and expresses personal opinions, feelings, and beliefs. About 66 minutes a day take place in this state. Children try to maximize this by going slowly to assemblies or when getting a hall pass- always eager to say 'hello' to a friend or to wave if one of their classmates is in another room. This is the state in which friends talk and play. In fact, teachers sometimes reward students with opportunities to move freely or to talk or to be themselves. But when students initiate the street corner state on their own, they risk losing recess time, getting extra homework, or being ridiculed in front of their peers. The **home state** occurs when parents or siblings visit the school. Children in this state may enjoy special privileges such as going home early or being exempt from certain school rules in the mother's presence, or it can be difficult if the parent is

there to discuss trouble at school with a staff member. The **sanctity state** is a time in which the child is contemplative, quiet, or prayerful. Typically the sanctity state is a very brief part of the day.

Since students seem to have so much enthusiasm and energy in street corner states, what would happen if the student and street corner states could be combined? Would it be possible? Many educators feel concerned about the level of stress children experience in school. Some stress can be attributed to problems in friendship. And some can be a result of the emphasis on testing and grades, as reflected in a Newsweek article entitled "The New First Grade: Are Kids Getting Pushed Too Fast Too Soon?" (Tyre, 2006). This article reports concerns of a principal who worries that students begin to burn out as early as 3rd grade. In the book, The Homework Myth: Why Our Kids Get Too Much of a Bad Thing, Kohn (2006) argues that neither research nor experience support claims that homework reinforces learning and builds responsibility. Why do schools assign homework so frequently? A look at cultural influences on education may provide some answers.



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Cultural Influences

Another way to examine the world of school is to look at the cultural values, concepts, behaviors and roles that are part of the school

experience but are not part of the formal curriculum. These are part of the **hidden curriculum** but are nevertheless very powerful messages. The hidden curriculum includes ideas of patriotism, gender roles, the ranking of occupations and classes, competition, and other values. Teachers, counselors, and other students specify and make known what is considered appropriate for girls and boys. The gender curriculum continues into high school, college, and professional school. Students learn a ranking system of occupations and social classes as well. Students in gifted programs or those moving toward college preparation classes may be viewed as superior to those who are receiving tutoring.

Gracy (2004) suggests that cultural training occurs early. Kindergarten is an "academic boot camp" in which students are prepared for their future student role-that of complying with an adult imposed structure and routine designed to produce docile, obedient, children who do not question meaningless tasks that will become so much of their future lives as students. A typical day is filled with structure, ritual, and routine that allows for little creativity or direct, hands-on contact. "Kindergarten, therefore, can be seen as preparing children not only for participation in the bureaucratic organization of large modern school systems, but also for the large-scale occupational bureaucracies of modern society." (Gracy, 2004, p. 148)

Emphasizing math and reading in preschool and kindergarten classes is becoming more common in some school districts. It is not without controversy, however. Some suggest that emphasis is warranted in order to help students learn math and reading skills that will be needed throughout school and in the world of work. This will also help school districts improve their accountability through test performance. Others argue that learning is becoming too structured to be enjoyable or effective and that students are being taught only to focus on performance and test-taking. Students learn student incivility or lack of sincere concern for politeness and consideration of others is taught in kindergarten through 12th grades through the "what is on the test" mentality

modeled by teachers. Students are taught to accept routinized, meaningless information in order to perform well on tests. And they are experiencing the stress felt by teachers and school districts focused on test scores and taught that their worth comes from their test scores. Genuine interest, an appreciation of the process of learning, and valuing others are important components of success in the workplace that are not part of the hidden curriculum in today's schools.

What Happened to No child Left Behind?

Children's academic performance is often measured with the use of standardized tests. **Achievement tests** are used to measure what a child has already learned. Achievement tests are often used as measures of teaching effectiveness within a school setting and as a method to make schools that receive tax dollars (such as public schools, charter schools, and private schools that receive vouchers) accountable to the government for their performance. In 2001, President Bush signed into effect Public Law 107-110, better known as the **No Child Left Behind Act** mandating that schools administer achievement tests to students and publish those results so that parents have an idea of their children's performance. Additionally, the government would have information on the gaps in educational achievement between children from various social class, racial, and ethnic groups. Schools that showed significant gaps in these levels of performance were mandated to work toward narrowing these gaps. Educators criticized the policy for focusing too much on testing as the only indication of student performance. Target goals were considered

unrealistic and set by the federal government rather than individual states. Because these requirements became increasingly unworkable for schools, changes to the law were requested. On December 12, 2015 President Obama signed into law the **Every Student Succeeds Act** (ESSA). This law is state driven and focuses on expanding educational opportunities and improving student outcomes, including in the areas of high school graduation, drop-out rates, and college attendance.

Middle School

Adolescents spend more waking time in school than in any other context (Eccles & Roeser, 2011). **Secondary education** is traditionally grades 7-12 and denotes the school years after elementary school (known as primary education) and before college or university (known as tertiary education). Adolescents who complete primary education (learning to read and write) and continue on through secondary and tertiary education tend to also have better health, wealth, and family life (Rieff, 1998). Because the average age of puberty has declined over the years, **middle schools** were created for grades 5 or 6 through 8 as a way to distinguish between early adolescence and late adolescence, especially because these adolescents different biologically, cognitively, and emotionally and definitely have different needs.

Transition to middle school is stressful, and the transition is often complex. When students transition from elementary to middle school, many students are undergoing physical, intellectual, social, emotional, and moral changes (Parker, 2013). Research suggests that early adolescence is an especially sensitive developmental period (McGill et al., 2012). Some students mature faster than others.

Students who are developmentally behind typically experience more stress than their counterparts (U.S. Department of Education, 2008). Consequently, they may earn lower grades and display decreased academic motivation, which may increase the rate of dropping out of school (U.S. Department of Education, 2008). For many middle school students, academic achievement slows down, and behavioral problems can increase.

While young adolescents seem to desire independence, they also need protection, security, and structure (Brighton, 2007). Baly, Cornell, & Lovegrove (2014) found that bullying increases in middle school, particularly in the first year. Additionally, unlike elementary school, concerns arise regarding procedural changes. Just when egocentrism is at its height, students are worried about being thrown into an environment of independence and responsibility. They are expected to get to and from classes on their own, manage time wisely, organize and keep up with materials for multiple classes, be responsible for all classwork and homework from multiple teachers, and at the same time develop and maintain a social life (Meece & Eccles, 2010). Students are trying to build new friendships and maintain the ones they already have. As noted throughout this module, peer acceptance is particularly important.

Another aspect to consider is technology. Typically, adolescents get their first cell phone at about age 11, and, simultaneously, they are also expected to research items on the Internet. Social media use and texting increase dramatically, and the research finds both harm and benefits to this use (Coyne et al., 2018).

High School

As adolescents enter high school, their continued cognitive development allows them to think abstractly, analytically, hypothetically, and logically, which is all formal operational thought. High school emphasizes formal thinking in an attempt to prepare

graduates for college where analysis is required. Overall, high school graduation rates in the United States have increased steadily over the past decade, reaching 83.2% in 2016 after four years in high school (Gewertz, 2017). Additionally, many students in the United States do attend college. Unfortunately, though, about half of those who go to college leave without a degree (Kena et al., 2016). Those that do earn a degree, however, do make more money and have an easier time finding employment. The key here is understanding adolescent development and supporting teens in making decisions about college or alternatives to college after high school.

High School Dropouts

The **status dropout rate** refers to the percentage of 16 to 24 year-olds who are not enrolled in school and do not have high school credentials (either a diploma or an equivalency credential such as a General Educational Development [GED] certificate). The dropout rate is based on sample surveys of the civilian, noninstitutionalized population, which excludes persons in prisons, persons in the military, and other persons not living in households. The dropout rate among high school students has declined from a rate of 12% in 1990 to 7% in 2013 (U.S. Department of Education, 2015). The rate is lower for Whites than for Blacks, and the rates for both Whites and Blacks are lower than the rate for Hispanics. However, the gap between Whites, Blacks, and Hispanics have narrowed (see Figure 7.2).

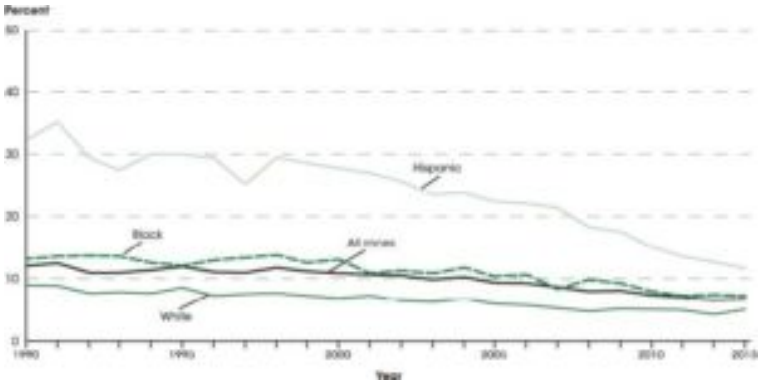


Figure 1. Status dropout rates of 16- through 24-year-olds, by race/ethnicity: 1990 through 2013

The dropout rate for males in 1990 was 12%, where it stayed until 2000. Thereafter the rate dropped to 7% in 2013. The dropout rate for females in 1990 was 12%, where it dropped to 10% in 2000, and in 2013 was 6%. From 1997 until 2012, the rate for males was appreciably higher than for females, while in 2013, the gender difference was minimal (U.S. Department of Education, 2015).

Higher Education

College is an important aspect of the lives of many young adults in the United States, with 36% of 18 to 24-year-olds (NCHEMS, 2016b). The rate of college attainment has grown more slowly in the United States than in a number of other nations in recent years (OCED, 2014). This may be due to the fact that the cost of attaining a degree is higher in the U.S. than in many other nations.

As the level of State funding of higher education declines, students are finding that the cost of college is outpacing the rate of inflation, Pell grant increases, and other student scholarships. One

in six students are funding their education through personal loans (TICAS, 2015). With the rising costs of higher education, various news headlines have asked if a college education is worth the cost. One way to address this question is in terms of the earning potential associated with various levels of educational achievement. In 2016, the average earnings for Americans 25 and older with only a high school education was $35,615, compared with $65,482 for those with a bachelor's degree, compared with $92,525 for those with more advanced degrees. Average earnings vary by gender, race, and geographical location in the United States (U.S. Census Bureau, 2017).

Nonetheless, the benefits both to the individual and society outweigh the initial costs. As can be seen in Figure 7.3, those in America with the most advanced degrees earn the highest income and have the lowest unemployment.

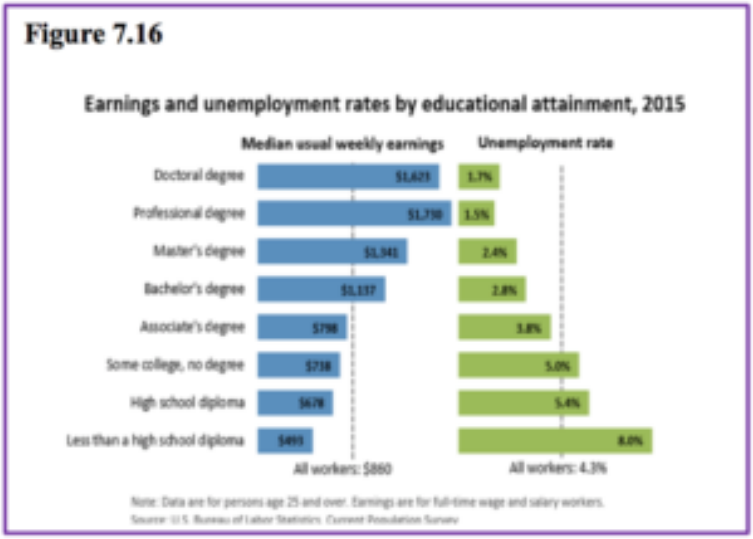


Figure 2. Earning and unemployment rate by education attainment, 2015.

Worldwide, over 80% of college-educated adults are employed, compared with just over 70% of those with a high school or equivalent diploma, and only 60% of those with no high school diploma (OECD, 2015). Those with a college degree will earn more over the course of their lifetime. Moreover, the benefits of a college education go beyond employment and finances. The OECD found that around the world, adults with higher educational attainment were more likely to volunteer, felt they had more control over their lives, and thus were more interested in the world around them. Studies of U.S. college students find that they gain a more distinct identity and become more socially competent, less dogmatic, and ethnocentric compared to those not in college (Pascarella, 2006).

Who is Going to College?

Each generation tends to earn (and perhaps need) increased levels of formal education. As we can see in Figure 7.4, approximately one-third of the American adult population has a bachelor's degree or higher, as compared with less than 5% in 1940. Educational attainment rates vary by gender and race. All races combined, women are slightly more likely to have graduated from college than men; that gap widens with graduate and professional degrees. However, wide racial disparities still exist. For example, 23% of African-Americans have a college degree, and only 16.4% of Hispanic Americans have a college degree, compared to 37% of non-Hispanic white Americans. The college graduation rates of African-Americans and Hispanic Americans have been growing in recent years. However, the rate has doubled since 1991 for African-Americans, and it has increased by 60% in the last two decades for Hispanic-Americans.

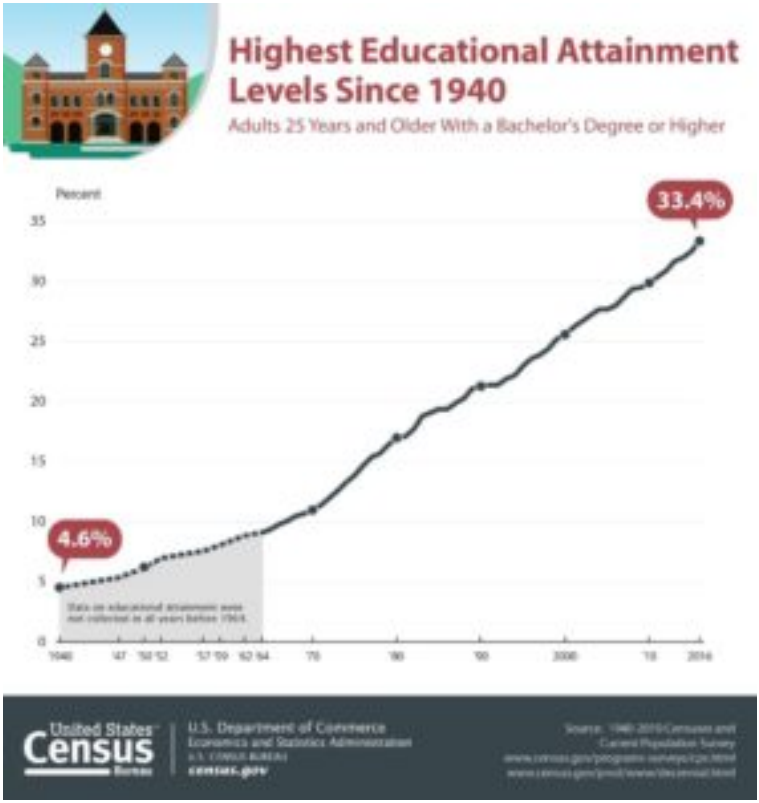


Figure 3. Higher education attainment for adults over age 25.

What about those young or emerging adults graduating high school today—is the majority of that group going to college? According to the U.S. Bureau of Labor Statistics (2017), 66.7% of youth ages 16-24 who graduated high school between January and October 2017 were enrolled in colleges or universities in October 2017. There were gender differences (71.7% of females vs. 61.1% of males) and racial differences (83% of Asians, 67.1% of non-Hispanic whites, 61% Hispanics, and 59.4% Blacks). Not all of these students will persist and earn college degrees, however (U.S. Census Bureau, 2017).

Higher Education and Career Preparation

Of concern in recent years is the relationship between higher education and the workplace. In 2005, American educator and then Harvard University President, Derek Bok, called for a closer alignment between the goals of educators and the demands of the economy. Companies outsource much of their work, not only to save costs but to find workers with the skills they need. What is required to do well in today's economy? Colleges and universities, he argued, need to promote global awareness, critical thinking skills, the ability to communicate, moral reasoning, and responsibility in their students. Regional accrediting agencies and state organizations provide similar guidelines for educators. Workers need skills in listening, reading, writing, speaking, global awareness, critical thinking, civility, and computer literacy—all skills that enhance success in the workplace.

More than a decade later, the question remains: does formal education prepare young adults for the workplace? It depends on whom you ask. In an article referring to information from the National Association of Colleges and Employers' 2018 Job Outlook Survey, Bauer-Wolf (2018) explains that employers perceive gaps in students' competencies, but many graduating college seniors are overly confident. The biggest difference was in perceived professionalism and work ethic (only 43% of employers thought that students are competent in this area compared to 90% of the students) (Bauer-Wolf, 2018). Similar differences were also found in terms of oral communication, written communication, and critical thinking skills. Only in terms of digital technology skills were more employers confident about students' competencies than were the students (66% compared to 60%).

It appears that students need to learn what some call "soft skills," as well as the particular knowledge and skills within their college major. As education researcher Loni Bordoloi Pazich (2018) noted, most American college students today are enrolling in business or other pre-professional programs and to be effective and successful

workers and leaders, they would benefit from the communication, teamwork, and critical thinking skills, as well as the content knowledge, gained from liberal arts education (Bordoloi Pazich, 2018). In fact, two-thirds of children starting primary school now will be employed in jobs in the future that currently do not exist. Therefore, students cannot learn every single skill or fact that they may need to know, but they can learn how to learn, think, research, and communicate well so that they are prepared to continually learn new things and adapt effectively in their careers and lives since the economy, technology, and global markets will continue to evolve (Henseler, 2017).

Work and Career Development

Working Teens

Many adolescents work either summer jobs or during the school year. Holding a job may offer teenagers extra funds, the opportunity to learn new skills, ideas about future careers, and perhaps the true value of money. However, there are numerous concerns about teenagers working, especially during the school year. A long-standing concern is that that it "engenders precocious maturity of more adult-like roles and problem behaviors" (Staff, VanEseltine, Woolnough, Silver, & Burrington, 2011, p. 150). Several studies have found that working more than 20 hours per week can lead to declines in grades, a general disengagement from school (Staff, Schulenberg, & Bachman, 2010; Lee & Staff, 2007; Marsh & Kleitman, 2005), an increase in substance abuse (Longest & Shanahan, 2007), engaging in earlier sexual behavior, and pregnancy (Staff et al., 2011).

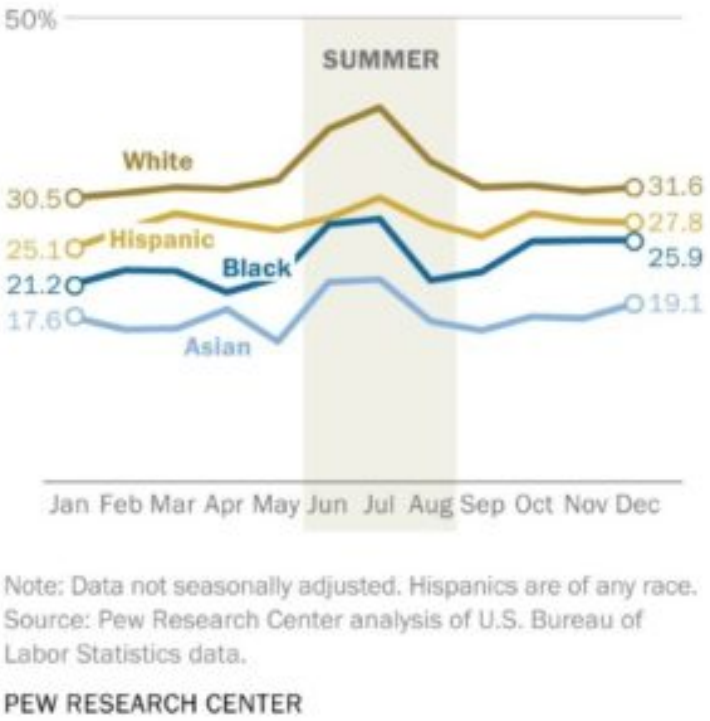


Figure 1. Percentage of U.S. 16- to 19-year-olds who are employed by month, 2018.

Teen employment rates have declined dramatically since 2000. Currently, only about a third of teens work. Since the late 1940s, the start of this data collection, through the 1980s, teen employment followed a predictable pattern—employment was up when the economy was good and fell when the economy was bad, but it typically remained between 46% and 58%. This trend changed following the recession of 1990-91 when teen employment did not recover as usual. Teen employment fell again during the 2001 recession, and even more during and after the 2007-09 recession. Teen employment bottomed out at about 30% in 2010, and while it

has edged up slightly, it is still well below pre-recession levels. This trend is not purely American—similar declines in youth employment have been observed in other advanced economies (DeSilver, 2018).

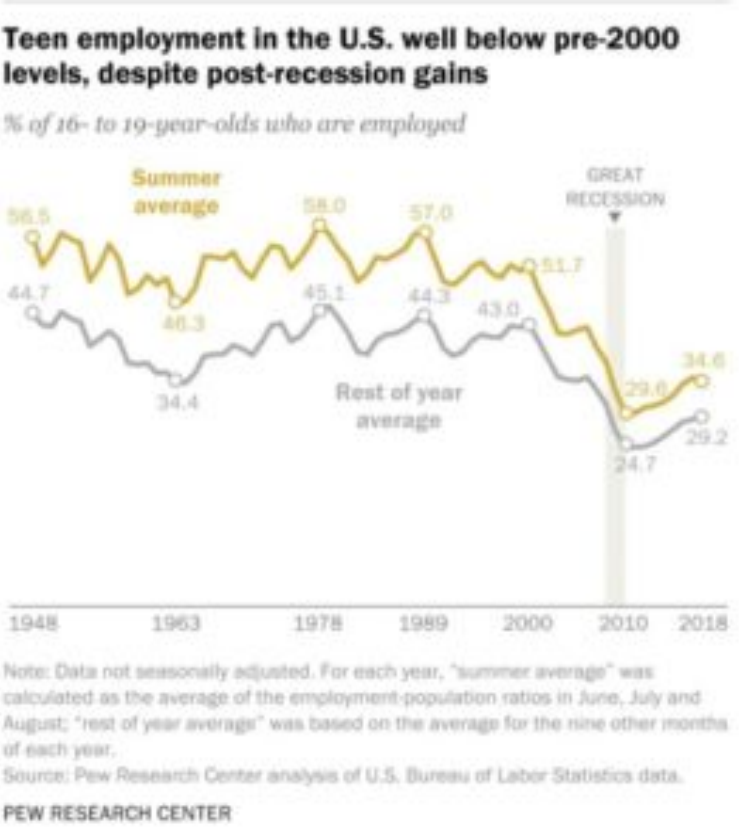


Figure 2. Percentage of 16- to 19-year-olds where are employed by year.

Research has examined reasons for the decline in teen employment rates since 2000 and has discovered multiple possibilities. There are fewer low-skill, entry-level jobs, such as sales clerks or office assistants, than in decades past. While most

industries have seen losses in teen workers, food service is the one industry hiring more teens than in previous decades. Another reason may have to do with changes to the academic calendar. More schools are ending in late June and starting back in late August. A shortened summer break makes finding summer employment challenging. In addition, more students are taking classes over the summer, including getting a head start on college credits. More teens are also completing community service hours, often a requirement for graduation or a bolster to their college applications. Finally, more students are doing unpaid internships, which does not count toward employment statistics (DeSilver, 2018).

Why are Fewer Teens Working Summer Jobs?



One or more interactive elements has been excluded from this version of the text. You can view them online here: https://childpsychology.pressbooks.sunycreate.cloud/?p=89#oembed-1

Video 1. *Why are Fewer Teens Working Summer Jobs?* is an interview with The Atlantic's Derek Thompson, author of "Teenagers Have Stopped Getting Summer Jobs—Why?" and discusses some of the reasons for the forward trend in teen employment.

Career Development

Work plays a significant role in the lives of people, and adolescence is a time when we begin to explore our career options and set a course for establishing a career. Career development has a number of stages:

Table 1. Stages of career development

#	STAGE	DESCRIPTION
1	GROWING	This is a time in the early years (4–13 years old) when you begin to have a sense of the future. You begin to realize that your participation in the world is related to being able to do certain tasks and accomplish certain goals.
2	EXPLORING	This period begins when you are a teenager, and it extends into your mid-twenties. In this stage, you find that you have specific interests and aptitudes. You are aware of your inclinations to perform and learn about some subjects more than others. You may try out jobs in your community or at your school. You may begin to explore a specific career. At this stage, you have some detailed "data points" about careers, which will guide you in certain directions.
3	ESTABLISHING	This period covers your mid-twenties through mid-forties. By now, you are selecting or entering a field you consider suitable, and you are exploring job opportunities that will be stable. You are also looking for upward growth, so you may be thinking about an advanced degree.
4	MAINTAINING	This stage is typical for people in their mid-forties to mid-sixties. You may be in an upward pattern of learning new skills and staying engaged. But you might also be merely "coasting and cruising" or even feeling stagnant. You may be taking stock of what you've accomplished and where you still want to go.
5	REINVENTING	In your mid-sixties, you are likely transitioning into retirement. But retirement in our technologically advanced world can be just the beginning of a new career or pursuit—a time when you can reinvent yourself. There are many new interests to pursue, including teaching others what you've learned, volunteering, starting online businesses, consulting, etc.

The American School Counselor Association (2017) recommends that school counselors aid students in their career development beginning as early as kindergarten and continue this development throughout their education.

One of the most well-known theories about career choice is from John Holland (1985), who proposed six categories of personality types based on career interests, as well as varying types of work

environments. People with similar interests and personalities gravitate toward similar careers. The better matched one's personality is to the workplace characteristics, the more satisfied and successful one is predicted to be with that career or vocational choice. Research support has been mixed, and we should note that there is more to satisfaction and success in a career than one's personality traits or likes and dislikes. For instance, education, training, and abilities need to match the expectations and demands of the job, plus the state of the economy, availability of positions, and salary rates may play practical roles in choices about work.



One or more interactive elements has been excluded from this version of the text. You can view them online here: https://childpsychology.pressbooks.sunycreate.cloud/?p=89#oembed-2

Video 2. *Holland's Personality Types* explained.

The six personality types are:

- **Realistic.** These people describe themselves as honest, loyal, and practical. They are doers more than thinkers. They may have strong mechanical, motor, and athletic abilities; like the outdoors; and prefer working with machines, tools, plants, and animals.
- **Investigative.** These people love problem-solving and analytical skills. They are intellectually stimulated and often mathematically or scientifically inclined; like to observe, learn, and evaluate; prefer working alone; might be described as reserved.
- **Artistic.** These people are the "free spirits." They are creative, emotional, intuitive, and idealistic; have a flair for

communicating ideas; dislike structure, and prefer working independently; like to sing, write, act, paint, and think creatively. They are similar to the investigative type but are interested in the artistic and aesthetic aspects of things more than the scientific.

- **Social.** These are "people" people. They are friendly and outgoing; love to help others, make a difference, or both; have strong verbal and personal skills and teaching abilities.
- **Enterprising.**These people are confident, assertive risk-takers. They are sociable; enjoy speaking and leadership; like to persuade rather than guide; like to use their influence; have strong interpersonal skills; are status-conscious.
- **Conventional.** These people are dependable, detail-oriented, disciplined, precise, persistent, and practical; value order; and are good at clerical and numerical tasks. They work well with people and data, so they are good organizers, schedulers, and project managers.

Table 2. Holland's occupational options

Type	Ideal Environments	Career Options
Realistic	• Structured • Clear lines of authority • Work with things and tools • Motivated to use hands-on skills to produce tangible results	• Contractor • Emergency medical technician (EMT) • Mechanic • Military career • Packaging engineer
Investigative	• Nonstructured • Research-oriented • Intellectual • Work with ideas and data • Motivated to probe questions of intellectual curiosity	• Pharmacist • Lab technician • Nanotechnologist • Geologist • College professor
Artistic	• Non-structured, creative • Rewards unconventional and aesthetic approaches • Creation of products and ideas • Motivated to express themselves through their work	• Advertising career • Architect • Animator • Musician • Journalist
Social	• Collaborative, collegial • Work with people and on people-related problems/issues • Work as a team or community • Motivated to help and empower others	• Teacher • Counselor • Correctional officer • Coach • Nurse

Type	Ideal Environments	Career Options
Enterprising	• Typical business environment • Results-oriented, driven • Work with people and data • Entrepreneurial • Motivated to persuade others on the merits of an idea or product	• Sales manager • Banker • Lawyer • Business owner • Restaurant manager
Conventional	• Orderly • Clear rules and policies • Consistent processes • Work with systems to manipulate and organize data • Motivated to organize information and bring order to data and things	• Auditor • Insurance underwriter • Bank teller • Office manager • Database manager

LINK TO LEARNING: WHAT'S YOUR RIGHT CAREER?

To complete a free online career questionnaire and identify potential careers based on your preferences, go to: **Career One Stop Questionnaire**

Career Trends

In recent years, young adults are more likely to find themselves job-hopping and periodically returning to school for further education

and retraining than in prior generations. However, researchers find that occupational interests remain fairly stable. Thus, despite the more frequent change in jobs, most people are generally seeking jobs with similar interests rather than entirely new careers (Rottinghaus, Coon, Gaffey & Zytowski, 2007).

Recent research also suggests that Millennials are looking for something different in their place of employment. According to a recent Gallup poll report (2016), Millennials want more than a paycheck; they want a purpose. Unfortunately, only 29% of Millennials surveyed by Gallup reported that they were "engaged" at work. In fact, they report being less engaged than Gen Xers and Baby Boomers, with 55% of Millennials saying they are not engaged at all with their job. This indifference to their workplace may explain the greater tendency to switch jobs. With their current job giving them little reason to stay, they are more likely to take any new opportunity to move on. Only half of Millennials saw themselves working at the same company a year later. Gallup estimates that this employment turnover and lack of engagement costs businesses $30.5 billion a year.

Neet: Neither Employed nor in Education or Training

Since teens and young adults were some of the hardest hit by the economic downturn in recent years (DeSilver, 2016), a number of young people have become **NEET**s, neither employed nor in education or training. While the number of young people who are NEETs has declined, there is concern that "without assistance, economically inactive young people won't gain critical job skills and will never fully integrate into the wider economy or achieve their full earning potential" (DeSilver, 2016, para. 3). In Europe, where the rates of NEETs are persistently high, there is also concern that having such large numbers of young adults with little opportunity may increase the chances of social unrest.

In the United States, in 2015, nearly 17% of 16 to 29 year-olds

were neither employed nor in school, according to data Desilver (2016) obtained from the Bureau of Labor Statistics. This is down slightly from 2013 when approximately 18.5% of this age group fit the category. As noted in Table 2, more women than men find themselves unemployed and not in school. Additionally, most NEETs have high school or less education, and Asians are less likely to be NEETs than any other ethnic group.

Who are the American NEETs?

Young people (ages 16-29) who are neither employed nor in education or training in 2015

	Number (in 1000s)	% of all NEETs	% of total subgroup
Total	10,200	100.0%	16.9%
Male	4,300	42.6	14.4
Female	5,900	57.4	19.5
16-19	2,200	21.7	13.3
20-24	3,800	37.6	17.5
25-29	4,200	40.7	19.1
White	7,000	69.1	15.8
Black	2,000	19.7	22.2
Asian	500	5.0	14.2
Other	600	6.2	20.9
Hispanic	2,500	24.5	19.5
Less than HS grad	2,700	26.7	-
HS grad, no college	4,100	40.0	-
Some college	1,700	16.9	-
Associate degree	500	5.1	-
Bachelor's degree or higher	1,100	11.2	-

Note: Hispanics can be of any race. Totals may not sum to 100% because of rounding.
Source: Pew Research Center analysis of Bureau of Labor Statistics data

PEW RESEARCH CENTER

Figure 3. The American NEETs: young people (ages 16–19) who are neither employed nor in education or training in 2015.

Gender Differences in Careers

Gender also has an impact on career choices. Despite the rise in the number of women who work outside of the home, there are some career fields that are still pursued more by men than women. Jobs held by women still tend to cluster in the service sector, such as education, nursing, and child-care worker. While in more technical and scientific careers, women are greatly outnumbered by men. Jobs that have been traditionally held by women tend to have lower status, pay, benefits, and job security (Ceci & Williams, 2007).

In recent years, women have made inroads into fields once dominated by males, and today women are almost as likely as men to become medical doctors or lawyers. Despite these changes, women are more likely to have lower status, and thus less pay than men in these professions. For instance, women are more likely to be a family practice doctor than a surgeon or are less likely to make partner in a law firm (Ceci & Williams, 2007).

Glossary

adolescent egocentrism: a characteristic of adolescent thinking that leads young people (ages 10-13) to focus on themselves to the exclusion of others (according to David Elkind)

accommodation: when we restructure or modify what we already know so that new information can fit in better

analytic thought: thought that results from analysis, such as a systematic ranking of pros and cons, risks and consequences, possibilities and facts. Analytic thought depends on logic and rationality

animism: the belief that inanimate objects are capable of actions and have lifelike qualities

artificialism: the belief that environmental characteristics can be attributed to human actions or interventions

assimilation: when we modify or change new information to fit into our schemas (what we already know)

attention deficit hyperactivity disorder: a neurological and behavioral disorder in which a person has difficulty staying on task, screening out distractions, and inhibiting behavioral outbursts

autism or autism spectrum disorder: a developmental disorder that affects communication and behavior

babbling: an infant's repetition of certain syllables, such as ba-ba-ba, that begins when babies are between 6 and 9 months old

behavioral decision-making theory: proposes that adolescents and adults both weigh the potential rewards and consequences of an action. However, research has shown that adolescents seem to give more weight to rewards, particularly social rewards, than do adults

centration: the act of focusing all attention on one characteristic or dimension of a situation, while disregarding all others

classification: the arrangement of information into categories or classes

concrete operational stage of cognitive development: Piaget's stage of development during middle childhood that emphasizes the use of logical thought, especially as applied to concrete, or physical objects

constructivist perspective: based on the work of Piaget, a quantitative, stage-theory approach. This view hypothesizes that adolescents' cognitive improvement is relatively sudden and drastic, as people learn by acting on their environment and they actively construct knowledge

deductive reasoning: reasoning from a general statement, premise, or principle, though logical steps to figure out (deduce) specifics. Also called top-down processing

divided attention: the ability to pay attention to two or more stimuli at the same time; this ability improves during adolescence

dual process model/dual processing: the notion that two networks exist within the human brain, one for emotional processing of stimuli and one for analytic reasoning

dyslexia: a specific learning disability that is neurobiological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities

ecological systems model: Brofenbrenner's theory that we all belong to many communities and are influenced in the context of multiple environments, also known as ecological systems; organized into five levels of external influence: microsystem, mesosystem, exosystem, macrosystem and chronosystem

egocentrism: the tendency of young children to think that everyone sees things in the same way as the child

fast-mapping: a word-learning process in which new words are rapidly learned by making connections between new words and concepts already known

formal operational thought: the fourth and final stage of Piaget's theory of cognitive development, characterized by more systematic logical thinking and by the ability to understand and systematically manipulate abstract concepts

hidden curriculum: cultural values, concepts, behaviors and roles

that are part of the school experience but are not part of the formal curriculum

holophrase: a single word that is used to express a complete, meaningful thought

home state: occurs when parents or siblings visit the school. Children in this state may enjoy special privileges such as going home early or being exempt from certain school rules in the mother's presence, or it can be difficult if the parent is there to discuss trouble at school with a staff member

hypothetical thought: reasoning that includes propositions and possibilities that may not reflect reality

identity: the understanding that objects have an identity or qualities that do not change even if the object is altered in some way

infantile or childhood amnesia: the idea that people forget everything that happened to them before the age of 3

information-processing perspective: derives from the study of artificial intelligence and explains cognitive development in terms of the growth of specific components of the overall process of thinking

intuitive thought: thoughts that arise from an emotion or a hunch, beyond rational explanation, and are influenced by past experiences and cultural assumptions

invincibility fable: an adolescent's egocentric conviction that he or she cannot be overcome or even harmed by anything that might defeat a normal mortal, such as unprotected sex, drug abuse, or high-speed driving

irreversibility: when a person is unable to reverse a sequence of events mentally

imaginary audience: the other people who, in an adolescent's egocentric belief, are watching and taking note of his or her appearance, ideas, and behavior. This belief makes many adolescents very self-conscious

language acquisition device (LAD): Chomsky's term for the hypothesized mental structure that enables humans to learn the language, including the basic aspects of grammar, vocabulary, and intonation

long-term memory: the third component of the memory system where information is stored for long periods of time

metacognition: refers to "thinking about thinking," and it is relevant in social cognition and results in increased introspection, self-consciousness, and intellectualization during adolescence

middle school: a school for children in the grades between elementary school and high school. Middle school usually begins with grade 6 and ends with grade 8

mnemonic devices: mental strategies to help learn and remember information more efficiently; improves during adolescence

morpheme: the smallest unit of language that conveys some type of meaning

naming explosion: a sudden increase in an infant's vocabulary, especially in the number of nouns, that begins at about 18 months of age

object permanence: the realization that objects (including people) still exist even if they can no longer be seen, touched, or heard

operations: the term used by Piaget to mean the logical rules that children develop with time

overregulation: a process in learning a language in which children overgeneralize rules to words where the rule is not applicable

personal fable: an aspect of adolescent egocentrism characterized by an adolescent's belief that his or her thoughts, feelings, and experiences are unique, more wonderful, or more awful than anyone else's

phoneme: a basic sound unit of a given language

preoperational stage: the second stage in Piaget's theory of cognitive development; describes the development in children ages 2-7

primary circular reactions: the first two stages of Piaget's sensorimotor intelligence which involve the infant's responses to its own body

private speech: speech that a child says aloud, but which is not meant to be part of communication with anyone else

reciprocity: the understanding that changing one quality of an

object can be compensated for by changes in another quality of that object

relativistic thinking: thinking that understands the relative or situational nature of circumstances

reversibility: the understanding that some things that have been changed can be returned to their original state

sanctity state: a time in which the child is contemplative, quiet, or prayerful. It is often only a very brief part of the day

schema: a set of linked mental representations of the world, which we use both to understand and to respond to situations

secondary circular reactions: stages 3 and 4 of Piaget's sensorimotor intelligence, which involves the infant's responses to objects and people

secondary education: the period after primary education (elementary or grade school) and before tertiary education (college). It usually occurs from about ages 12 to 18, although there is some variation by school and by nation

selective attention: the process by which one focuses on one stimulus while tuning out another; this ability improves during adolescence

self-fulfilling prophecy: the tendency to act in a way that makes what you predict will happen come true

sensorimotor intelligence: Piaget's term for the way infants think (by using their senses and motor skills) during the first stage of cognitive development

sensory memory: the first component of the memory system where information comes in through the 5 senses and is processed if the mind believes that the information is important

street corner state: state in which the child is playful, energetic, excited, and expresses personal opinions, feelings, and beliefs

student state: this state is one in which the student focuses on a task or tries to stay focused on a task, is passive, compliant, and often frustrated

syncretism: the tendency to think that if two events occur simultaneously, one caused the other

tertiary circular reactions: consist of actions (stage 5) and ideas (stage 6) where infants become more creative in their thinking

theory of mind: the understanding that the mind holds people's beliefs, desires, emotions, and intentions. One component of this is understanding that the mind can be tricked or that the mind is not always accurate

theory of multiple intelligences: Garner's theory that there are many kinds of intelligence. The modern version of the theory recognizes 9 forms of intelligence

transductive reasoning: a failure in understanding cause and effect relationships which happens when a child reasons from specific to specific; drawing a relationship between two separate events that are otherwise unrelated

triarchic theory of intelligence: Sternberg's theory that recognizes three forms of intelligence: academic, creative, and practical

working memory: the second component of the memory system where information that has been processed in sensory memory goes. Working memory includes all the information that you are consciously aware of

zone of proximal development: the range of material that a child is ready to learn if proper support and guidance are given from either a peer who understands the material or by an adult

PSYCHOSOCIAL DEVELOPMENT IN INFANCY THROUGH ADOLESCENCE

Learning outcomes

- Describe emotional development and self-awareness during infancy
- Contrast styles of attachment
- Describe temperament and the goodness-of-fit model
- Describe the development of a self-concept and identity development during childhood
- Describe domains of identity development
- Explain Freud's psychodynamic theory as it applies to early childhood
- Explain Erikson's psychosocial theory as it applies to child development
- Explain Marcia's four identity statuses
- Examine concerns about childhood stress and trauma
- Describe the impact of different parenting styles on children's development
- Apply principles of operant conditioning to parenting and behavior modification
- Describe the importance of peer relationships to

children and adolescent as they apply to development
- Explain the role that aggression, anxiety, and depression play in adolescent development
- Understand Kohlberg's theory of moral development

Psychosocial development occurs as children form relationships, interact with others, and understand and manage their feelings. In emotional and social development, forming healthy attachments is very important and is the major social milestone of infancy. Attachment is a long-standing connection or bond with others. Developmental psychologists are interested in how infants reach this milestone. They ask such questions as: how do parent and infant attachment bonds form? How does neglect affect these bonds? What accounts for children's attachment differences?

The time between a child's second and sixth birthdays is full of new social experiences. At the beginning of this stage, a child selfishly engages in the world—the goal is to please the self. As the child gets older, they realize that relationships built on give-and-take. They start to learn to empathize with others. They learn to make friends. Learning to navigate the social sphere is not easy, but children do it readily.

While the child is learning about their place in various relationships, they are also developing an understanding of emotion. A two-year-old does not have a good grasp on their emotions, but by the time a child is six, they understand their emotions better. They also understand how to control their emotions—even to the point that they may put on a different emotion than they are actually feeling. Further, by the time a child is six years old, they understand that other people have emotions and that all of the emotions involved in a situation (theirs and other people's) should be taken into consideration. That said, although

the six-year-old understands these things, they are not always good at putting the knowledge into action. We'll examine some of these issues in this section.

Children in middle childhood are starting to make friends in more sophisticated ways. They are choosing friends for specific characteristics, including shared interests, sense of humor, and being a good person. That is quite a departure from the earlier days of playing with the people in your group just because they are there. Children in middle childhood are starting to realize that there are benefits to friendships, and there are sometimes difficulties as well. In this section, we'll examine some aspects of these relationships.

Adolescence is a period of personal and social identity formation, in which different roles, behaviors, and ideologies are explored. In the United States, adolescence is seen as a time to develop independence from parents while remaining connected to them. Some key points related to social development during adolescence include the following:

- Adolescence is the period of life known for the formation of personal and social identity.
- Adolescents must explore, test limits, become autonomous, and commit to an identity, or sense of self.
- Erik Erikson referred to the task of the adolescent as one of identity versus role confusion. Thus, in Erikson's view, an adolescent's main questions are "Who am I?" and "Who do I want to be?"
- Early in adolescence, cognitive developments result in greater self-awareness, the ability to think about abstract, future possibilities, and the ability to consider multiple possibilities and identities at once.
- Changes in the levels of certain neurotransmitters (such as dopamine and serotonin) influence the way in which adolescents experience emotions, typically making them more emotional and more sensitive to stress.
- When adolescents have advanced cognitive development and

maturity, they tend to resolve identity issues more easily than peers who are less cognitively developed.

- As adolescents work to form their identities, they pull away from their parents, and the peer group becomes very important; despite this, relationships with parents still play a significant role in identity formation.

Emotional Development

At birth, infants exhibit two emotional responses: attraction and withdrawal. They show attraction to pleasant situations that bring comfort, stimulation, and pleasure. And they withdraw from unpleasant stimulation such as bitter flavors or physical discomfort. At around two months, infants exhibit social engagement in the form of **social smiling** as they respond with smiles to those who engage their positive attention. Pleasure is expressed as laughter at 3 to 5 months of age, and displeasure becomes more specific to fear, sadness, or anger (usually triggered by frustration) between ages 6 and 8 months. Where anger is a healthy response to frustration, sadness, which appears in the first months as well, usually indicates withdrawal (Thiam et al., 2017).

As reviewed above, infants progress from reactive pain and pleasure to complex patterns of socioemotional awareness, which is a transition from basic instincts to learned responses. Fear is not always focused on things and events; it can also involve social responses and relationships. The fear is often associated with the presence of strangers or the departure of significant others known respectively as **stranger wariness** and **separation anxiety**, which appear sometime between 6 and 15 months. And there is even some indication that infants may experience jealousy as young as 6 months of age (Hart & Carrington, 2002).

Stranger wariness actually indicates that brain development and increased cognitive abilities have taken place. As an infant's memory develops, they are able to separate the people that they know from the people that they do not. The same cognitive advances allow infants to respond positively to familiar people and recognize those that are not familiar. **Separation anxiety** also indicates cognitive advances and is universal across cultures. Due to the infant's increased cognitive skills, they are able to ask reasonable questions like "Where is my caregiver going?" "Why are they leaving?" or

"Will they come back?" Separation anxiety usually begins around 7-8 months and peaks around 14 months, and then decreases. Both stranger wariness and separation anxiety represent important social progress because they not only reflect cognitive advances but also growing social and emotional bonds between infants and their caregivers.



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As we will learn through the rest of this module, caregiving does matter in terms of infant emotional development and emotional regulation. **Emotional regulation** can be defined by two components: emotions as regulating and emotions as regulated. The first, "emotions as regulating," refers to changes that are elicited by activated emotions (e.g., a child's sadness eliciting a change in parent response). The second component is labeled "emotions as regulated," which refers to the process through which the activated emotion is itself changed by deliberate actions taken by the self (e.g., self-soothing, distraction) or others (e.g., comfort).

Throughout infancy, children rely heavily on their caregivers for emotional regulation; this reliance is labeled co-regulation, as parents and children both modify their reactions to the other based on the cues from the other. Caregivers use strategies such as distraction and sensory input (e.g., rocking, stroking) to regulate infants' emotions. Despite their reliance on caregivers to change the intensity, duration, and frequency of emotions, infants are capable of engaging in self-regulation strategies as young as 4 months old. At this age, infants intentionally avert their gaze from

overstimulating stimuli. By 12 months, infants use their mobility in walking and crawling to intentionally approach or withdraw from stimuli.

Throughout toddlerhood, caregivers remain important for the emotional development and socialization of their children, through behaviors such as labeling their child's emotions, prompting thought about emotion (e.g., "why is the turtle sad?"), continuing to provide alternative activities/distractions, suggesting coping strategies, and modeling coping strategies. Caregivers who use such strategies and respond sensitively to children's emotions tend to have children who are more effective at emotion regulation, are less fearful and fussy, more likely to express positive emotions, easier to soothe, more engaged in environmental exploration, and have enhanced social skills in the toddler and preschool years.



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Attachment

Psychosocial development occurs as children form relationships, interact with others, and understand and manage their feelings. In social and emotional development, forming healthy attachments is very important and is the major social milestone of infancy. **Attachment** is a long-standing connection or bond with others. Developmental psychologists are interested in how infants reach this milestone. They ask such questions as: How do parent and infant attachment bonds form? How does neglect affect these bonds? What accounts for children's attachment differences?



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Early Attachment Research

Researchers Harry Harlow, John Bowlby, and Mary Ainsworth conducted studies designed to answer these questions. In the 1950s, Harlow conducted a series of experiments on monkeys. He separated newborn monkeys from their mothers. Each monkey was presented with two surrogate mothers. One surrogate mother was made out of wire mesh, and she could dispense milk. The other surrogate mother was softer and made from cloth: This monkey did not dispense milk. Research shows that the monkeys preferred the soft, cuddly cloth monkey, even though she did not provide

any nourishment. The baby monkeys spent their time clinging to the cloth monkey and only went to the wire monkey when they needed to be feed. Prior to this study, the medical and scientific communities generally thought that babies become attached to the people who provide their nourishment. However, Harlow (1958) concluded that there was more to the mother-child bond than nourishment. Feelings of comfort and security are the critical components of maternal-infant bonding, which leads to healthy psychosocial development.



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Video 1. *Harlow's Studies on Dependency in Monkeys.*

Building on the work of Harlow and others, John Bowlby developed the concept of attachment theory. He defined attachment as the affectional bond or tie that an infant forms with the mother (Bowlby, 1969). He believed that an infant must form this bond with a primary caregiver in order to have normal social and emotional development. In addition, Bowlby proposed that this attachment bond is very powerful and continues throughout life. He used the concept of a secure base to define a healthy attachment between parent and child (1988). A **secure base** is a parental presence that gives children a sense of safety as they explore their surroundings. Bowlby said that two things are needed for a healthy attachment: The caregiver must be responsive to the child's physical, social, and emotional needs; and the caregiver and child must engage in mutually enjoyable interactions (Bowlby, 1969).

Ainsworth's Strange Situation

While Bowlby thought attachment was an all-or-nothing process, Mary Ainsworth's (1970) research showed otherwise. Ainsworth wanted to know if children differ in the ways they bond, and if so, how. To find the answers, she used the **Strange Situation** procedure to study attachment between mothers and their infants (1970). In the Strange Situation, the mother (or primary caregiver) and the infant (age 12-18 months) are placed in a room together. There are toys in the room, and the caregiver and child spend some time alone in the room. After the child has had time to explore their surroundings, a stranger enters the room. The mother then leaves her baby with the stranger. After a few minutes, she returns to comfort her child.



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Video 2. *Secure and Insecure Attachment.*

Types of Attachment

Based on how the toddlers responded to the separation and reunion, Ainsworth identified three types of parent-child attachments: secure, avoidant, and resistant (Ainsworth & Bell, 1970). A fourth style, known as disorganized attachment, was later described (Main & Solomon, 1990).

Secure Attachment

The most common type of attachment—also considered the healthiest—is called **secure attachment**. The secure child feels confident that their needs will be met in a timely and consistent way. The child prefers their caregivers over others. A young child will use the caregiver as the base for exploration, providing assurance and enabling discovery. In the Strange Situation, securely attached children were distressed when their caregivers left the room, but when their caregivers returned, the securely attached children were happy to see them.



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Securely attached children have caregivers who are sensitive and responsive to their needs. in North America, this interaction may include an emotional connection in addition to adequate care. However, even in cultures where mothers do not talk, cuddle, and play with their infants, secure attachments can develop (LeVine et. al., 1994). Secure attachments can form provided the child has consistent contact and care from one or more caregivers. Consistency of contacts may be jeopardized if the infant is cared for in a daycare with a high turn-over of caregivers or if institutionalized and given little more than basic physical care. And while infants who, perhaps because of being in orphanages with inadequate care, have not had the opportunity to attach in infancy can form initial secure attachments several years later, they may

have more emotional problems of depression or anger, or be overly friendly as they make adjustments (O'Connor et. al., 2003).

Watch It

Video 3. This video demonstrates Ainsworth's protocol for assessing the quality of a child's attachment to their caregiver and the typical response of a securely attached child.



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Avoidant Attachment

With **avoidant attachment,** a style marked by insecurity, is characterized by a tendency to avoid contact with the caregiver and with others. This child may have learned that needs typically go unmet and learns that the caregiver does not provide care and cannot be relied upon for comfort, even sporadically. An insecure-avoidant child learns to be more independent and disengaged. Such a child might sit passively in a room filled with toys until it is time to go.

During the Strange Situation, the child is unresponsive to the parent, does not use the parent as a secure base, and does not care if the parent leaves. The toddler reacts to the parent the same way they react to a stranger. When the parent does return, the child is slow to show a positive reaction. Ainsworth theorized that these children were most likely to have a caregiver who was insensitive and inattentive to their needs (Ainsworth, Blehar, Waters, & Wall, 1978).

Watch It

Video 4. This video depicts a child with the avoidant attachment style.



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Anxious-Ambivalent Attachment

The **anxious-ambivalent attachment** is another insecure syle. These children tend to show clingy behavior and are hesitant to engage in activities or play aware from the caregiver. It is as if the child fears that the caregiver will abandon them and clings accordingly. The child may cry if separated from the caregiver and also cry upon their return. They seek constant reassurance that never seems to satisfy their doubt. This type of insecure attachment might be a result of not having their needs met in a consistent or timely way. Consequently, the infant is never sure that the world is a trustworthy place or that he or she can rely on others without some anxiety. A caregiver who is unavailable, perhaps because of marital tension, substance abuse, or preoccupation with work, may send a

message to the infant they cannot rely on having their needs met. A caregiver who attends to a child's frustration can help teach them to be calm and to relax. But an infant who receives only sporadic attention when experiencing discomfort may not learn how to calm down.

During the Strange Situations, these children do not explore the toys in the room, appearing too fearful. When the caregiver leaves, the child becomes extremely disturbed and angry with the parent. Furthermore, when the caregiver returns, the children are difficult to comfort. Resistant attachment is thought to be the result of the caregivers' inconsistent level of response to their child (Ainsworth & Bell, 1970).

Watch It

Video 5. The final segment of this video demonstrates the behavior of a child with an anxious-ambivalent attachment style.



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Disorganized-Disorientated Attachment

Finally, the **disorganized-disorganized attachment** represents the most insecure style of attachment and occurs when the child is given mixed, confused, and inappropriate responses from the caregiver. For example, a mother who suffers from schizophrenia may laugh when a child is hurting or cry when a child exhibits joy. The child does not learn how to interpret emotions or to connect with the unpredictable caregiver. This type of attachment is seen most often in kids who have been abused or severely neglected. Research has shown that abuse disrupts a child's ability to regulate their emotions. These children behaved oddly in the Strange Situation. They freeze, run around the room in an erratic manner, or try to run away when the caregiver returns (Main & Solomon, 1990) and their behavior tends to be unpredictable in response to the protocol.

How common are the attachment styles among children in the United States? It is estimated that about 65 percent of children in the United States are securely attached. Twenty percent exhibit avoidant styles and 10 to 15 percent are resistant. Another 5 to 10 percent may be characterized as disorganized.

Influences on Attachment Formation

While Ainsworth's research has found support in subsequent studies, it has also met criticism. Some researchers have pointed out that a child's **temperament** (which we discuss next) may have a strong influence on attachment (Gervai, 2009; Harris, 2009), and others have noted that attachment varies from culture to culture, a factor that was not accounted for in Ainsworth's research (Rothbaum, Weisz, Pott, Miyake, & Morelli, 2000; van Ijzendoorn & Sagi-Schwartz, 2008).

Attachment styles vary in the amount of security and closeness felt in the relationship and they can change with new experiences. The type of attachment fostered in parenting styles varies by culture as well. For example, German parents value independence and Japanese mothers are typically by their children's sides. As a result, the rate of insecure-avoidant attachments is higher in Germany and insecure-resistant attachments are higher in Japan. These differences reflect cultural variation rather than true insecurity, however (van Ijzendoorn and Sagi, 1999). Keep in mind that methods for measuring attachment styles have been based on a model that reflects middle-class, US values and interpretation. Newer methods for assessing attachment styles involve using a Q-sort technique in which a large number of behaviors are recorded on cards and the observer sorts the cards in a way that reflects the type of behavior that occurs within the situation.

Temperament

Perhaps you have spent time with a number of infants. How were they alike? How did they differ? Or compare yourself with your siblings or other children you have known well. You may have noticed that some seemed to be in a better mood than others and that some were more sensitive to noise or more easily distracted than others. These differences may be attributed to temperament. **Temperament** is an inborn quality noticeable soon after birth. Temperament is not the same as personality but may lead to personality differences. Generally, personality traits are learned, whereas temperament is genetic. Of course, for every trait, nature and nurture interact.



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Video 1. *Temperament, Heredity, and Genes.*

According to Chess and Thomas (1996), children vary on nine dimensions of temperament. These include activity level, regularity (or predictability), sensitivity thresholds, mood, persistence or distractibility, among others. These categories include the following:

1. Activity level. Does the child display mostly active or inactive states?
2. Rhythmicity or Regularity. Is the child predictable or unpredictable regarding sleeping, eating, and elimination

patterns?

3. Approach-Withdrawal. Does the child react or respond positively or negatively to a newly encountered situation?
4. Adaptability. Does the child adjust to unfamiliar circumstances easily or with difficulty?
5. Responsiveness. Does it take a small or large amount of stimulation to elicit a response (e.g., laughter, fear, pain) from the child?
6. Reaction Intensity. Does the child show low or high energy when reacting to stimuli?
7. Mood Quality. Is the child normally happy and pleasant, or unhappy and unpleasant?
8. Distractibility. Is the child's attention easily diverted from a task by external stimuli?
9. Persistence and Attention Span. Persistence – How long will the child continue at an activity despite difficulty or interruptions? Attention span – For how long a period of time can the child maintain interest in an activity?

The New York Longitudinal Study was a long-term study of infants, on these dimensions, which began in the 1950s. Most children do not have their temperament clinically measured, but categories of temperament have been developed and are seen as useful in understanding and working with children. Based on this study, babies can be described according to one of several profiles: easy or flexible (40%), slow to warm up or cautious (15%), difficult or feisty (10%), and undifferentiated, or those who can't easily be categorized (35%).

Easy babies (40% of infants) have a positive disposition. Their body functions operate regularly and they are adaptable. They are generally positive, showing curiosity about new situations and their emotions are moderate or low in intensity. Difficult babies (10%

of infants) have more negative moods and are slow to adapt to new situations. When confronted with a new situation, they tend to withdraw. Slow-to-warm babies (15% of infants) are inactive, showing relatively calm reactions to their environment. Their moods are generally negative, and they withdraw from new situations, adapting slowly. The undifferentiated (35%) could not be consistently categorized. These children show a variety of combinations of characteristics. For example, an infant may have an overall positive mood but react negatively to new situations.



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No single type of temperament is invariably good or bad, however, infants with difficult temperaments are more likely than other babies to develop emotional problems, especially if their mothers were depressed or anxious caregivers (Garthus-Niegel et al., 2017). Children's long-term adjustment actually depends on the **goodness-of-fit** of their particular temperament to the nature and demands of the environment in which they find themselves. Therefore, what appears to be more important than child temperament is how caregivers respond to it.

Think about how you might approach each type of child in order to improve your interactions with them. An easy or flexible child will not need much extra attention unless you want to find out whether they are having difficulties that have gone unmentioned. A slow-to-warm-up child may need to be given advance warning if new people or situations are going to be introduced. A difficult or feisty child may need to be given extra time to burn off their

energy. A caregiver's ability to accurately read and work well with the child will enjoy this **goodness-of-fit,** meaning their styles match, and communication and interaction can flow. The temperamentally active children can do well with parents who support their curiosity but could have problems in a more rigid family.

It is this goodness-of-fit between child temperament and parental demands and expectations that can cause struggles. Rather than believing that discipline alone will bring about improvements in children's behavior, our knowledge of temperament may help a parent, teacher, or other caregiver gain insight to work more effectively with a child. Viewing temperamental differences as varying styles that can be responded to accordingly, as opposed to 'good' or 'bad' behavior. For example, a persistent child may be difficult to distract from forbidden things such as electrical cords, but this persistence may serve her well in other areas such as problem-solving. Positive traits can be enhanced and negative traits can be subdued. The child's style of reaction, however, is unlikely to change. Temperament doesn't change dramatically as we grow up, but we may learn how to work around and manage our temperamental qualities. Temperament may be one of the things about us that stays the same throughout development.

Link to Learning

Read the article "Lasting Effects of a Goodness- or Poorness-of-fit" from Psychology Today to learn more about goodness-of-fit and poorness-of-fit.

Development of Self

Self-Awareness

During the second year of life, children begin to recognize themselves as they gain a sense of the self as an object. The realization that one's body, mind, and activities are distinct from those of other people is known as **self-awareness** (Kopp, 2011). The most common technique used in research for testing self-awareness in infants is a mirror test known as the "Rouge Test." The rouge test works by applying a dot of rouge (colored makeup) on an infant's face and then placing them in front of the mirror. If the infant investigates the dot on their nose by touching it, they are thought to realize their own existence and have achieved self-awareness. A number of research studies have used this technique and shown self-awareness to develop between 15 and 24 months of age. Some researchers also take language such as "I, me, my, etc." as an indicator of self-awareness.

Cognitive psychologist Philippe Rochat (2003) described a more in-depth developmental path in acquiring self-awareness through various stages. He described self-awareness as occurring in five stages beginning from birth.

Table 1. Stages of acquiring self-awareness

Stage	Description
Stage 1 – Differentiation (from birth)	Right from birth infants are able to differentiate the self from the non-self. A study using the infant rooting reflex found that infants rooted significantly less from self-stimulation, contrary to when the stimulation came from the experimenter.
Stage 2 – Situation (by 2 months)	In addition to differentiation, infants at this stage can also situate themselves in relation to a model. In one experiment infants were able to imitate tongue orientation from an adult model. Additionally, another sign of differentiation is when infants bring themselves into contact with objects by reaching for them.
Stage 3 – Identification (by 2 years)	At this stage, the more common definition of "self-awareness" comes into play, where infants can identify themselves in a mirror through the "rouge test" as well as begin to use language to refer to themselves.
Stage 4 – Permanence	This stage occurs after infancy when children are aware that their sense of self continues to exist across both time and space.
Stage 5 – Self-consciousness or meta-self-awareness	This also occurs after infancy. This is the final stage when children can see themselves in 3rd person, or how they are perceived by others.

Once a child has achieved self-awareness, the child is moving toward understanding social emotions such as guilt, shame or embarrassment, and pride, as well as sympathy and empathy. These will require an understanding of the mental state of others which is acquired around age 3 to 5 and will be explored in the next module (Berk, 2007).

Watch It

Video 1. This video shows one study that demonstrates how toddlers become self-aware around 18 months.



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Developing a Concept of Self

Early childhood is a time of forming an initial sense of self. A **self-concept** or idea of who we are, what we are capable of doing, and how we think and feel is a social process that involves taking into

consideration how others view us. It might be said, then, that in order to develop a sense of self, you must have interaction with others. Interactionist theorists, Cooley and Mead offer two interesting explanations of how a sense of self develops.



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Video 2. *Self-Concept, Self-Identity, and Social Identity* explains the various types of self and the formation of identity.

Cooley's Looking-Glass Self

Charles Horton Cooley (1964) suggested that our self-concept comes from looking at how others respond to us. This process, known as the looking-glass self involves looking at how others seem to view us and interpreting this as we make judgments about whether we are good or bad, strong or weak, beautiful or ugly, and so on. Of course, we do not always interpret their responses accurately so our self-concept is not simply a mirror reflection of the views of others. After forming an initial self-concept, we may use our existing self-concept as a mental filter screening out those responses that do not seem to fit our ideas of who we are. So compliments may be negated, for example.

Think of times in your life when you felt more self-conscious. The process of the looking-glass self is pronounced when we are preschoolers. Later in life, we also experience this

process when we are in a new school, new job, or are taking on a new role in our personal lives and are trying to gauge our own performance. When we feel more sure of who we are we focus less on how we appear to others.



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Video 3. *Charles Cooley–Looking Glass Self* explains more about this theory.

Mead's I and Me

George Herbert Mead (1967) offered an explanation of how we develop a social sense of self by being able to see ourselves through the eyes of others. There are two parts of the self: the "I" which is the part of the self that is spontaneous, creative, innate, and is not concerned with how others view us and the "me" or the social definition of who we are.

When we are born, we are all "I" and act without concern about how others view us. But the socialized self begins when we are able to consider how one important person views us. This initial stage is called "taking the role of the significant other." For example, a child may pull a cat's tail and be told by his mother, "No! Don't do that, that's bad" while receiving a slight slap on the hand. Later, the child may mimic the same behavior toward the self and say aloud, "No, that's bad" while patting his own hand. What has

happened? The child is able to see himself through the eyes of the mother. As the child grows and is exposed to many situations and rules of culture, he begins to view the self in the eyes of many others through these cultural norms or rules. This is referred to as "taking the role of the generalized other" and results in a sense of self with many dimensions. The child comes to have a sense of self as a student, as a friend, as a son, and so on.



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Video 4. *George Herbert Mead–The I and the Me* explains more about this theory.



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Exaggerated Sense of Self

One of the ways to gain a clearer sense of self is to exaggerate those qualities that are to be incorporated into the self. Preschoolers often like to exaggerate their own qualities or to seek validation as

the biggest or smartest or child who can jump the highest. Much of this may be due to the simple fact that the child does not understand their own limits. Young children may really believe that they can beat their parent to the mailbox, or pick up the refrigerator.

This exaggeration tends to be replaced by a more realistic sense of self in middle childhood as children realize that they do have limitations. Part of this process includes having parents who allow children to explore their capabilities and give the child authentic feedback. Another important part of this process involves the child learning that other people have capabilities, too and that the child's capabilities may differ from those of other people. Children learn to compare themselves to others to understand what they are "good at" and what they are not as good at.

Children in middle childhood have a more realistic sense of self than do those in early childhood. That exaggerated sense of self as "biggest" or "smartest" or "tallest" gives way to an understanding of one's strengths and weaknesses. This can be attributed to greater experience in comparing one's own performance with that of others and to greater cognitive flexibility. A child's self-concept can be influenced by peers, family, teachers, and the messages they send about a child's worth. Contemporary children also receive messages from the media about how they should look and act. Movies, music videos, the internet, and advertisers can all create cultural images of what is desirable or undesirable and this too can influence a child's self-concept.

Self-Efficacy

Imagine two students, Sally and Lucy, who are about to take the same math test. Sally and Lucy have the same exact ability to do well in math, the same level of intelligence, and the same motivation to do well on the test. They also studied together. They even have

the same brand of shoes on. The only difference between the two is that Sally is very confident in her mathematical and her test-taking abilities, while Lucy is not. So, who is likely to do better on the test? Sally, of course, because she has the confidence to use her mathematical and test-taking abilities to deal with challenging math problems and to accomplish goals that are important to her—in this case, doing well on the test. This difference between Sally and Lucy—the student who got the A and the student who got the B-, respectively—is self-efficacy. Self-efficacy influences behavior and emotions in particular ways that help people better manage challenges and achieve valued goals.

A concept that was first introduced by Albert Bandura in 1977, **self-efficacy** refers to a person's belief that he or she is able to effectively perform the tasks needed to attain a valued goal (Bandura, 1977). Since then, self-efficacy has become one of the most thoroughly researched concepts in psychology. Just about every important domain of human behavior has been investigated using self-efficacy theory (Bandura, 1997; Maddux, 1995; Maddux & Gosselin, 2011, 2012). Self-efficacy does not refer to your abilities but rather to your beliefs about what you can do with your abilities. Also, self-efficacy is not a trait—there are not certain types of people with high self-efficacies and others with low self-efficacies (Stajkovic & Luthans, 1998). Rather, people have self-efficacy beliefs about specific goals and life domains. For example, if you believe that you have the skills necessary to do well in school and believe you can use those skills to excel, then you have high academic self-efficacy.

Self-efficacy may sound similar to a concept you may be familiar with already—*self-esteem*—but these are very different notions. Self-esteem refers to how much you like or "esteem" yourself—to what extent you believe you are a good and worthwhile person. Self-efficacy, however, refers to your self-confidence to perform well and to achieve in specific areas of life such as school, work, and relationships. Self-efficacy does influence self-esteem because how you feel about yourself overall is greatly influenced by your

confidence in your ability to perform well in areas that are important to you and to achieve valued goals. For example, if performing well in athletics is very important to you, then your self-efficacy for athletics will greatly influence your self-esteem; however, if performing well in athletics is not at all important to you, then your self-efficacy for athletics will probably have little impact on your self-esteem.

Self-efficacy begins to develop in very young children. Once self-efficacy is developed, it does not remain constant—it can change and grow as an individual has different experiences throughout his or her lifetime. When children are very young, their parents' self-efficacies are important (Jones & Prinz, 2005). Children of parents who have high parental self-efficacies perceive their parents as more responsive to their needs (Gondoli & Silverberg, 1997). Around the ages of 12 through 16, adolescents' friends also become an important source of self-efficacy beliefs. Adolescents who associate with peer groups that are not academically motivated tend to experience a decline in academic self-efficacy (Wentzel, Barry, & Caldwell, 2004). Adolescents who watch their peers succeed, however, experience a rise in academic self-efficacy (Schunk & Miller, 2002). This is an example of gaining self-efficacy through vicarious performances, as discussed above. The effects of self-efficacy that develop in adolescence are long-lasting. One study found that greater social and academic self-efficacy measured in people ages 14 to 18 predicted greater life satisfaction five years later (Vecchio, Gerbino, Pastorelli, Del Bove, & Caprara, 2007).



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Video 5. *Self-Esteem, Self-Efficacy, and Locus of Control.*

Major Influences on Self-Efficacy

Self-efficacy beliefs are influenced in five different ways (Bandura, 1997), which are summarized in the table below.

Influence	Definition
Performance Experiences	When you do well and succeed at a particular task to attain a valued goa, you usually believe that you will succeed again at this task. When you fail you often expect that you will fail again in the future if you try that task.
Vicarious Performances	If someone who seems similar to you succeeds, then you may come to believe that you will succeed as well.
Verbal Persuasion	This involves people telling you what they believe you are and are not capable of doing. Not all people will be equally persuasive.
Imaginal Performances	What you imagine yourself doing and how well or poorly you imagine yourself doing it.
Affective States & Physical Sensations	When you associate negative moods and negative physical sensations with failure, and positive physical sensations with success.

Table 2. Major Influences on Self-efficacy.

These five types of self-efficacy influence can take many real-world forms that almost everyone has experienced. You may have had previous performance experiences affect your academic self-efficacy when you did well on a test and believed that you would do well on the next test. A vicarious performance may have affected your athletic self-efficacy when you saw your best friend skateboard for the first time and thought that you could skateboard well,

too. Verbal persuasion could have affected your academic self-efficacy when a teacher that you respect told you that you could get into the college of your choice if you studied hard for the SATs. It's important to know that not all people are equally likely to influence your self-efficacy through verbal persuasion. People who appear trustworthy or attractive, or who seem to be experts, are more likely to influence your self-efficacy than are people who do not possess these qualities (Petty & Brinol, 2010). That's why a teacher you respect is more likely to influence your self-efficacy than a teacher you do not respect. Imaginal performances are an effective way to increase your self-efficacy. For example, imagining yourself doing well on a job interview actually leads to more effective interviewing (Knudstrup, Segrest, & Hurley, 2003). Affective states and physical sensations abound when you think about the times you have given presentations in class. For example, you may have felt your heart racing while giving a presentation. If you believe your heart was racing because you had just had a lot of caffeine, it likely would not affect your performance. If you believe your heart was racing because you were doing a poor job, you might believe that you cannot give the presentation well. This is because you associate the feeling of anxiety with failure and expect to fail when you are feeling anxious.

Benefits of High Self-Efficacy

Academic Performance

Consider academic self-efficacy in your own life and recall the earlier example of Sally and Lucy. Are you more like Sally, who has high academic self-efficacy and believes that she can use her abilities to do well in school, or are you more like Lucy, who does not believe that she can effectively use her academic abilities to excel

in school? Do you think your own self-efficacy has ever affected your academic ability? Do you think you have ever studied more or less intensely because you did or did not believe in your abilities to do well? Many researchers have considered how self-efficacy works in academic settings, and the short answer is that academic self-efficacy affects every possible area of academic achievement (Pajares, 1996).

Students who believe in their ability to do well academically tend to be more motivated in school (Schunk, 1991). When self-efficacious students attain their goals, they continue to set even more challenging goals (Schunk, 1990). This can all lead to better performance in school in terms of higher grades and taking more challenging classes (Multon, Brown, & Lent, 1991). For example, students with high academic self-efficacies might study harder because they believe that they are able to use their abilities to study effectively. Because they studied hard, they receive an A on their next test. Teachers' self-efficacies also can affect how well a student performs in school. Self-efficacious teachers encourage parents to take a more active role in their children's learning, leading to better academic performance (Hoover-Dempsey, Bassler, & Brissie, 1987).

Although there is a lot of research about how self-efficacy is beneficial to school-aged children, college students can also benefit from self-efficacy. Freshmen with higher self-efficacies about their ability to do well in college tend to adapt to their first year in college better than those with lower self-efficacies (Chemers, Hu, & Garcia, 2001). The benefits of self-efficacy continue beyond the school years: people with strong self-efficacy beliefs toward performing well in school tend to perceive a wider range of career options (Lent, Brown, & Larkin, 1986). In addition, people who have stronger beliefs of self-efficacy toward their professional work tend to have more successful careers (Stajkovic & Luthans, 1998).

One question you might have about self-efficacy and academic performance is how a student's actual academic ability interacts with self-efficacy to influence academic performance. The answer is that a student's actual ability does play a role, but it is also

influenced by self-efficacy. Students with greater ability perform better than those with lesser ability. But, among a group of students with the same exact level of academic ability, those with stronger academic self-efficacies outperform those with weaker self-efficacies. One study (Collins, 1984) compared performance on difficult math problems among groups of students with different levels of math ability and different levels of math self-efficacy. Among a group of students with average levels of math ability, the students with weak math self-efficacies got about 25% of the math problems correct. The students with average levels of math ability and strong math self-efficacies got about 45% of the questions correct. This means that by just having stronger math self-efficacy, a student of average math ability will perform 20% better than a student with similar math ability but weaker math self-efficacy. You might also wonder if self-efficacy makes a difference only for people with average or below-average abilities. Self-efficacy is important even for above-average students. In this study, those with above-average math abilities and low math self-efficacies answered only about 65% of the questions correctly; those with above-average math abilities and high math self-efficacies answered about 75% of the questions correctly.

Healthy Behaviors

Think about a time when you tried to improve your health, whether through dieting, exercising, sleeping more, or any other way. Would you be more likely to follow through on these plans if you believed that you could effectively use your skills to accomplish your health goals? Many researchers agree that people with stronger self-efficacies for doing healthy things (e.g., exercise self-efficacy, dieting self-efficacy) engage in more behaviors that prevent health problems and improve overall health (Strecher, DeVellis, Becker, & Rosenstock, 1986). People who have strong self-efficacy beliefs

about quitting smoking are able to quit smoking more easily (DiClemente, Prochaska, & Gibertini, 1985). People who have strong self-efficacy beliefs about being able to reduce their alcohol consumption are more successful when treated for drinking problems (Maisto, Connors, & Zywiak, 2000). People who have stronger self-efficacy beliefs about their ability to recover from heart attacks do so more quickly than those who do not have such beliefs (Ewart, Taylor, Reese, & DeBusk, 1983).

One group of researchers (Roach Yadrick, Johnson, Boudreaux, Forsythe, & Billon, 2003) conducted an experiment with people trying to lose weight. All people in the study participated in a weight loss program that was designed for the U.S. Air Force. This program had already been found to be very effective, but the researchers wanted to know if increasing people's self-efficacies could make the program even more effective. So, they divided the participants into two groups: one group received an intervention that was designed to increase weight loss self-efficacy along with the diet program, and the other group received only the diet program. The researchers tried several different ways to increase self-efficacy, such as having participants read a copy of *Oh, The Places You'll Go!* by Dr. Seuss (1990), and having them talk to someone who had successfully lost weight. The people who received the diet program and an intervention to increase self-efficacy lost an average of 8.2 pounds over the 12 weeks of the study; those participants who had only the diet program lost only 5.8 pounds. Thus, just by increasing weight loss self-efficacy, participants were able to lose over 50% more weight.

Studies have found that increasing a person's nutritional self-efficacy can lead them to eat more fruits and vegetables (Luszczynska, Tryburcy, & Schwarzer, 2006). Self-efficacy plays a large role in successful physical exercise (Maddux & Dawson, 2014). People with stronger self-efficacies for exercising are more likely to plan on beginning an exercise program, actually beginning that program (DuCharme & Brawley, 1995), and continuing it (Marcus, Selby, Niaura, & Rossi, 1992). Self-efficacy is especially important

when it comes to safe sex. People with greater self-efficacies about condom usage are more likely to engage in safe sex (Kaneko, 2007), making them more likely to avoid sexually transmitted diseases, such as HIV (Forsyth & Carey, 1998).

Athletic Performance

If you are an athlete, self-efficacy is especially important in your life. Professional and amateur athletes with stronger self-efficacy beliefs about their athletic abilities perform better than athletes with weaker levels of self-efficacy (Wurtele, 1986). This holds true for athletes in all types of sports, including track and field (Gernigon & Delloye, 2003), tennis (Sheldon & Eccles, 2005), and golf (Bruton, Mellalieu, Shearer, Roderique-Davies, & Hall, 2013). One group of researchers found that basketball players with strong athletic self-efficacy beliefs hit more foul shots than did basketball players with weak self-efficacy beliefs (Haney & Long, 1995). These researchers also found that the players who hit more foul shots had greater increases in self-efficacy after they hit the foul shots compared to those who hit fewer foul shots and did not experience increases in self-efficacy. This is an example of how we gain self-efficacy through performance experiences.

Self-Regulation

One of the major reasons that higher self-efficacy usually leads to better performance and greater success is that self-efficacy is an important component of self-regulation. Self-regulation is the complex process through which you control your thoughts, emotions, and actions (Gross, 1998). It is crucial to success and well-being in almost every area of your life. Every day, you are exposed

to situations where you might want to act or feel a certain way that would be socially inappropriate or that might be unhealthy for you in the long run. For example, when sitting in a boring class, you might want to take out your phone and text your friends, take off your shoes and take a nap, or perhaps scream because you are so bored. Self-regulation is the process that you use to avoid such behaviors and instead sit quietly through class. Self-regulation takes a lot of effort, and it is often compared to a muscle that can be exhausted (Baumeister, Bratslavsky, Muraven, & Tice, 1998). For example, a child might be able to resist eating a pile of delicious cookies if he or she is in the room with the cookies for only a few minutes, but if that child were forced to spend hours with the cookies, his or her ability to regulate the desire to eat the cookies would wear down. Eventually, his or her self-regulatory abilities would be exhausted, and the child would eat the cookies. A person with strong self-efficacy beliefs might become less distressed in the face of failure than might someone with weak self-efficacy. Because self-efficacious people are less likely to become distressed, they draw less on their self-regulation reserves; thus, self-efficacious people persist longer in the face of a challenge.

Self-efficacy influences self-regulation in many ways to produce better performance and greater success (Maddux & Volkmann, 2010). First, people with stronger self-efficacies have greater *motivation to perform* in the area for which they have stronger self-efficacies (Bandura & Locke, 2003). This means that people are motivated to work harder in those areas where they believe they can effectively perform. Second, people with stronger self-efficacies are more likely to *persevere through challenges* in attaining goals (Vancouver, More, & Yoder, 2008). For example, people with high academic self-efficacies are better able to motivate themselves to persevere through such challenges as taking a difficult class and completing their degrees because they believe that their efforts will pay off. Third, self-efficacious people believe that *they have more control over a situation*. Having more control over a situation means that self-efficacious people might be more

likely to engage in the behaviors that will allow them to achieve their desired goal. Finally, self-efficacious people *have more confidence* in their problem-solving abilities and, thus, are able to better use their cognitive resources and make better decisions, especially in the face of challenges and setbacks (Cervone, Jiwani, & Wood, 1991).

Self-regulation is the capacity to alter one's responses. It is broadly related to the term "self-control". The term "regulate" means to change something—but not just any change, rather change to bring it into agreement with some idea, such as a rule, a goal, a plan, or a moral principle. To illustrate, when the government regulates how houses are built, that means the government inspects the buildings to check that everything is done "up to code" or according to the rules about good building. In a similar fashion, when you regulate yourself, you watch and change yourself to bring your responses into line with some ideas about how they should be.

People regulate four broad categories of responses. They control their thinking, such as in trying to concentrate or to shut some annoying earworm tune out of their mind. They control their emotions, as in trying to cheer themselves up or to calm down when angry (or to stay angry, if that's helpful). They control their impulses, as in trying not to eat fattening food, trying to hold one's tongue, or trying to quit smoking. Last, they try to control their task performances, such as in pushing themselves to keep working when tired and discouraged, or deciding whether to speed up (to get more done) or slow down (to make sure to get it right).

Early Work on Delay of Gratification

Research on self-regulation was greatly stimulated by early experiments conducted by Walter Mischel and his colleagues (e.g., Mischel, 1974) on the capacity to delay gratification, which means being able to refuse current temptations and pleasures to work toward future benefits. In a typical study with what later

came to be called the "marshmallow test," a 4-year-old child would be seated in a room, and a favorite treat such as a cookie or marshmallow was placed on the table. The experimenter would tell the child, "I have to leave for a few minutes and then I'll be back. You can have this treat any time, but if you can wait until I come back, you can have two of them." Two treats are better than one, but to get the double treat, the child had to wait. Self-regulation was required to resist that urge to gobble down the marshmallow on the table so as to reap the larger reward.

Many situations in life demand similar delays for the best results. Going to college to get an education often means living in poverty and debt rather than getting a job to earn money right away. But in the long run, the college degree increases your lifetime income by hundreds of thousands of dollars. Very few nonhuman animals can bring themselves to resist immediate temptations so as to pursue future rewards, but this trait is an important key to success in human life.

watch it

Video 6. Watch as a teacher uses the Marshmallow Test, originally conducted by Walter Mischel, to teach her students about self-control. The Marshmallow Test has demonstrated correlations between self-control in preschool and successful outcomes in later life. According to Mischel, young children can learn strategies to delay gratification and resist engaging in impulsive behaviors. A retest of the study completed in 2018 by Watts, Duncan, and Quan found the effects of self-control in young children and the later life outcomes to be minimal and

more closely tied to the education level of the mother, rather than self-control.



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Benefits of Self-Control

People who are good at self-regulation do better than others in life. Follow-up studies with Mischel's samples found that the children who resisted temptation and delayed gratification effectively grew into adults who were better than others in school and work, more popular with other people, and who were rated as nicer, better people by teachers and others (Mischel, Shoda, & Peake, 1988; Shoda, Mischel, & Peake, 1990). College students with high self-control get better grades, have better close relationships, manage their emotions better, have fewer problems with drugs and alcohol, are less prone to eating disorders, are better adjusted, have higher self-esteem, and get along better with other people, as compared to people with low self-control (Tangney, Baumeister, & Boone, 2004). They are happier and have less stress and conflict (Hofmann, Vohs, Fisher, Luhmann, & Baumeister, 2013). Longitudinal studies have found that children with good self-control go through life with fewer problems, are more successful, are less likely to be

arrested or have a child out of wedlock, and enjoy other benefits (Moffitt et al., 2011). Criminologists have concluded that low self-control is a—if not the—key trait for understanding the criminal personality (Gottfredson & Hirschi, 1990; Pratt & Cullen, 2000).

Some researchers have searched for evidence that too much self-control can be bad (Tangney et al., 2004)—but without success. There is such a thing as being highly inhibited or clinically "over-controlled," which can impair initiative and reduce happiness, but that does not appear to be an excess of self-regulation. Rather, it may stem from having been punished excessively as a child and, therefore, adopting a fearful, inhibited approach to life. In general, self-control resembles intelligence in that the more one has, the better off one is, and the benefits are found through a broad range of life activities.

Three Ingredients of Effective Self-Regulation

For self-regulation to be effective, three parts or ingredients are involved. The first is standards, which are ideas about how things should (or should not) be. The second is monitoring, which means keeping track of the target behavior that is to be regulated. The third is the capacity to change.

Standards are an indispensable foundation for self-regulation. We already saw that self-regulation means a change in relation to some idea; without such guiding ideas, the change would largely be random and lacking direction. Standards include goals, laws, moral principles, personal rules, other people's expectations, and social norms. Dieters, for example, typically have a goal in terms of how much weight they wish to lose. They help their self-regulation further by developing standards for how much or how little to eat and what kinds of foods they will eat.

The second ingredient is monitoring. It is hard to regulate something without being aware of it. For example, dieters count

their calories. That is, they keep track of how much they eat and how fattening it is. In fact, some evidence suggests that dieters stop keeping track of how much they eat when they break their diet or go on an eating binge, and the failure of monitoring contributes to eating more (Polivy, 1976). Alcohol has been found to impair all sorts of self-regulation, partly because intoxicated persons fail to keep track of their behavior and compare it to their standards.

The combination of standards and monitoring was featured in an influential theory about self-regulation by Carver and Scheier (1981, 1982, 1998). Those researchers started their careers studying self-awareness, which is a key human trait. The study of self-awareness recognized early on that people do not simply notice themselves the way they might notice a tree or car. Rather, self-awareness always seemed to involve comparing oneself to a standard. For example, when a man looks in a mirror, he does not just think, "Oh, there I am," but more likely thinks, "Is my hair a mess? Do my clothes look good?" Carver and Scheier proposed that the reason for this comparison to standards is that it enables people to regulate themselves, such as by changing things that do not measure up to their standards. In the mirror example, the man might comb his hair to bring it into line with his standards for personal appearance. Good students keep track of their grades, credits, and progress toward their degree and other goals. Athletes keep track of their times, scores, and achievements, as a way to monitor improvement.

The process of monitoring oneself can be compared to how a thermostat operates. The thermostat checks the temperature in the room compares it to a standard (the setting for the desired temperature), and if those do not match, it turns on the heat or air conditioner to change the temperature. It checks again and again, and when the room temperature matches the desired setting, the thermostat turns off the climate control. In the same way, people compare themselves to their personal standards, make changes as needed, and stop working on change once they have met their goals. People feel good not just when they reach their goals but even when

they deem they are making good progress (Carver & Scheier, 1990). They feel bad when they are not making sufficient progress.

That brings up the third ingredient, which is the capacity to change oneself. In effective self-regulation, people operate on themselves to bring about these changes. The popular term for this is "willpower," which suggests some kind of energy is expended in the process. Psychologists hesitate to adopt terms associated with folk wisdom because there are many potential implications. Here, the term is used to refer specifically to some energy that is involved in the capacity to change oneself.

Consistent with the popular notion of willpower, people do seem to expend some energy during self-regulation. Many studies have found that after people exert self-regulation to change some response, they perform worse on the next unrelated task if it too requires self-regulation (Hagger, Wood, Stiff, & Chatzisarantis, 2010). That pattern suggests that some energy such as willpower was used up during the first task, leaving less available for the second task. The term for this state of reduced energy available for self-regulation is ego depletion (Baumeister, Bratslavsky, Muraven, & Tice, 1998). Current research provides mixed results on ego depletion, and we need further study to better understand when and how it occurs. It may be that as people go about their daily lives, they gradually become ego-depleted because they are exerting self-control and resisting temptations. Some research suggests that during the state of ego depletion people become less helpful and more aggressive, prone to overeat, misbehave sexually, and express more prejudice (Hofmann, Vohs, & Baumeister, 2012).

Thus, a person's capacity for self-regulation is not constant, but rather it fluctuates. To be sure, some people are generally better than others at controlling themselves (Tangney et al., 2004). But even someone with excellent self-control may occasionally find that control breaks down under ego depletion. In general, self-regulation can be improved by getting enough sleep and healthy food, and by minimizing other demands on one's willpower.

There is some evidence that regular exercise of self-control can

build up one's willpower, like strengthening a muscle (Baumeister & Tierney, 2011; Oaten & Cheng, 2006). Even in early adulthood, one's self-control can be strengthened. Furthermore, research has shown that disadvantaged, minority children who take part in preschool programs such as Head Start (often based on the Perry program) end up doing better in life even as adults. This was thought for a while to be due to increases in intelligence quotient (IQ), but changes in IQ from such programs are at best temporary. Instead, recent work indicates that improvement in self-control and related traits may be what produce the benefits (Heckman, Pinto, & Savelyev, in press). It's not doing math problems or learning to spell at age 3 that increases subsequent adult success—but rather the benefit comes from having some early practice at planning, getting organized, and following rules.

Self-Esteem

Self-esteem is defined as one's thoughts and feelings about one's self-concept and identity–it is an evaluative judgment about who we are. Most theories on self-esteem state that there is a grand desire, across all genders and ages, to maintain, protect, and enhance their self-esteem.

The emergence of cognitive skills in early childhood results in improved perceptions of the self, but they tend to focus on external qualities, which are referred to as the categorical self. When researchers ask young children to describe themselves, their descriptions tend to include physical descriptors, preferred activities,
and favorite possessions. Thus, the self-description of a 3-year-old might be a 3-year-old girl with red hair, who likes to play with blocks. However, even children as young as three know there is more to themselves than these external characteristics.

Harter and Pike (1984) challenged the method of measuring

personality with an open-ended question as they felt that language limitations were hindering the ability of young children to express their self-knowledge. They suggested a change to the method of measuring self-concept in young children, whereby researchers provide statements that ask whether something is true of the child (e.g., "I like to boss people around", "I am grumpy most of the time"). They discovered that in early childhood, children answer these statements in an internally consistent manner, especially after the age of four (Goodvin, Meyer, Thompson & Hayes, 2008), and often give similar responses to what others (parents and teachers) say about the child (Brown, Mangelsdorf, Agathen, & Ho, 2008; Colwell & Lindsey, 2003).

Young children tend to have a generally positive self-image. This optimism is often the result of a lack of social comparison when making self-evaluations (Ruble, Boggiano, Feldman, & Loeble, 1980), and with comparison between what the child once could do to what they can do now (Kemple, 1995). However, this does not mean that preschool children are exempt from negative self-evaluations. Preschool children with insecure attachments to their caregivers tend to have lower self-esteem at age four (Goodvin et al., 2008). Maternal negative affect (emotional state) was also found by Goodwin and her colleagues to produce more negative self-evaluations in preschool children.

Remarkably, children begin developing social understanding very early in life and are also able to include other peoples' appraisals of them into their self-concept, including parents, teachers, peers, culture, and media. Internalizing others' appraisals and creating social comparison affect children's self-esteem, which is defined as an evaluation of one's identity. Children can have individual assessments of how well they perform a variety of activities and also develop an overall, global self-assessment. If there is a discrepancy between how children view themselves and what they consider to be their ideal selves, their self-esteem can be negatively affected.

In middle childhood, friendships take on new importance as

judges of one's worth, competence, and attractiveness. Friendships provide the opportunity for learning social skills such as how to communicate with others and how to negotiate differences. Children get ideas from one another about how to perform certain tasks, how to gain popularity, what to wear, say, and listen to, and how to act. This society of children marks a transition from a life focused on the family to a life concerned with peers. Peers play a key role in a child's self-esteem at this age as any parent who has tried to console a rejected child will tell you. No matter how complimentary and encouraging the parent may be, being rejected by friends can only be remedied by renewed acceptance.

In adolescence, teens continue to develop their self-concept. Their ability to think of the possibilities and to reason more abstractly may explain the further differentiation of the self during adolescence. However, the teen's understanding of self is often full of contradictions. Young teens may see themselves as outgoing but also withdrawn, happy yet often moody, and both smart and completely clueless (Harter, 2012). These contradictions, along with the teen's growing recognition that their personality and behavior seem to change depending on who they are with or where they are, can lead the young teen to feel like a fraud. With their parents, they may seem angrier and sullen, with their friends they are more outgoing and goofy, and at work, they are quiet and cautious. "Which one is really me?" may be the refrain of the young teenager.

Harter (2012) found that adolescents emphasize traits such as being friendly and considerate more than do children, highlighting their increasing concern about how others may see them. Harter also found that older teens add values and moral standards to their self-descriptions. As self-concept develops, so does self-esteem. In addition to the academic, social, appearance, and physical/athletic dimensions of self-esteem in middle and late childhood, teens also add perceptions of their competency in romantic relationships, on the job, and in close friendships (Harter, 2006).

Contrary to popular belief, there is no empirical evidence for a significant drop in self-esteem throughout

adolescence. "Barometric self-esteem" fluctuates rapidly and can cause severe distress and anxiety, but baseline self-esteem remains highly stable across adolescence. The validity of global self-esteem scales has been questioned, and many suggest that more specific scales might reveal more about the adolescent experience.

Self-esteem often decreases when children transition from one school setting to another, such as shifting from elementary to middle school, or junior high to high school (Ryan, Shim, & Makara, 2013). These decreases are usually temporary unless there are additional stressors such as parental conflict, or other family disruptions (De Wit, Karioja, Rye, & Shain, 2011). Self-esteem rises from mid to late adolescence for most teenagers, especially if they feel confident in their peer relationships, their appearance, and athletic abilities (Birkeland, Melkivik, Holsen, & Wold, 2012).

There are several self-concepts and situational factors that tend to impact an adolescent's self-esteem. Teens that are close to their parents and their parents are authoritative tend to have higher self-esteem. Further, when adolescents are recognized for their successes, have set high vocational aspirations, are athletic, or feel attractive, they have higher self-esteem. Teens tend to have lower self-esteem when entering middle school, feel peer rejection, and experience academic failure. Also, adolescents that have authoritarian or permissive parents, need to relocate, or have low socioeconomic status, are more likely to experience lower self-esteem.

Girls are most likely to enjoy high self-esteem when engaged in supportive relationships with friends; the most important function of friendship to them is having someone who can provide social and moral support. When they fail to win friends' approval or cannot find someone with whom to share common activities and interests, in these cases, girls suffer from low self-esteem.

In contrast, boys are more concerned with establishing and asserting their independence and defining their relation to authority. As such, they are more likely to derive high self-esteem from their ability to influence their friends. On the other hand,

the lack of romantic competence, for example, failure to win or maintain the affection of a romantic interest is the major contributor to low self-esteem in adolescent boys.

Self Esteem Types

According to Mruk (2003), self-esteem is based on two factors: competence and worthiness. The relationship between competence and worthiness defines one's self-esteem type. As these factors are a spectrum, we can even further differentiate self-esteem types and potential issues associated with each (Figure 8.1).

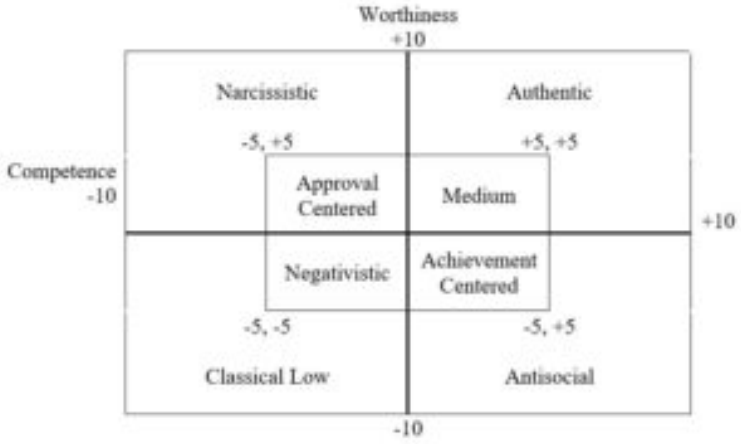


Figure 1. Self-Esteem meaning matrix with basic types and levels. Adapted from Mruk, 2003.

Those with high levels of competence and those that feel highly worthy will have high self-esteem. This self-esteem type tends to be stable and characterized by openness to new experiences and a tendency towards optimism. Those at the medium-high self-esteem type feel adequately competent and worthy. At the authentic level,

individuals are realistic about their competence and feel worthy. They will actively pursue a life of positive, intrinsic values.

Individuals with low levels of competence and worthiness will have low self-esteem. At the negativistic level, people tend to be cautious and are protective of what little self-esteem that they do possess. Those at the classic low self-esteem level experienced impaired function due to their low feelings of competence and worth and are at risk for depression and giving up.

It is also possible to have high levels of competence but feel unworthy. This combination is a defensive or fragile self-esteem type, called competence-based self-esteem, where the person tends to compensate for their low levels of worthiness by focusing on their competence. At the success-seeking level, these individuals' self-esteem is contingent on their achievements, and they are often anxious about failure. The Antisocial level includes an exaggerated need for success and power, even as to the point of acting out aggressively to achieve it.

The combination of low competence and high worthiness is worthiness-based self-esteem. This type is another defensive or fragile self-esteem where the individual has a low level of competence and compensates by focusing instead on their worthiness. At the approval-seeking level, these individuals are sensitive to criticism and rejection and base their self-esteem on the approval of others. At the narcissistic level, people will have an exaggerated sense of self-worth regardless of the lack of competencies. They also tend to be highly reactive to criticism and are very defensive.

Multiple Selves



Early in adolescence, cognitive developments result in greater self-awareness, greater awareness of others and their thoughts and judgments, the ability to think about abstract, future possibilities, and the ability to consider multiple possibilities at once. As a result, adolescents experience a significant shift from the simple, concrete, and global self-descriptions typical of young children; as children, they defined themselves by physical traits, whereas adolescents define themselves based on their values, thoughts, and opinions.

Adolescents can conceptualize multiple "possible selves" that they could become and long-term possibilities and consequences of their choices. Exploring these possibilities may result in abrupt changes in self-presentation as the adolescent chooses or rejects qualities and behaviors, trying to guide the actual self toward the ideal self (whom the adolescent wishes to be) and away from the feared self (whom the adolescent does not want to be). For many, these distinctions are uncomfortable, but they also appear to motivate achievement through behavior consistent with the ideal and distinct from the feared possible selves.

Further distinctions in self-concept, called "differentiation," occur

as the adolescent recognizes the contextual influences on their behavior and the perceptions of others, and begins to qualify their traits when asked to describe themselves. Differentiation appears fully developed by mid-adolescence. Peaking in the 7th-9th grades, the personality traits adolescents use to describe themselves refer to specific contexts, and therefore may contradict one another. The recognition of inconsistent content in the self-concept is a common source of distress in these years, but this distress may benefit adolescents by encouraging structural development.

Identity Development Theory

A well-developed identity is comprised of goals, values, and beliefs to which a person is committed. It is the awareness of the consistency in self over time, the recognition of this consistency by others (Erikson, 1980). The process of identity development is both an individual and social phenomenon (Adams & Marshall, 1996). Much of this process is assumed during adolescence when cognitive development allows for an individual to construct a 'theory of self' (Elkind, 1998) based on exposure to role models and identity options (Erikson, 1980). Erikson (1968) believed this period of development to be an 'identity crisis,' a crucial turning point in which an individual must develop in one way or another, ushering the adolescent toward growth and differentiation. Identity is formed through a process of exploring options or choices and committing to an option based upon the outcome of their exploration. Failure to establish a well-developed sense of identity can result in identity confusion. Those experiencing identity confusion do not have a clear sense of who they are or their role in society.

Identity development is vital to a person's understanding of self and participation in their social systems. Adams and Marshall (1996) established that identity formation provides five functions: a structure and order to self-knowledge; a sense of consistency and coherence to beliefs, goals, and self-knowledge; a sense of continuity for one's history and future; goals and direction; a sense of personal control of their choices and outcomes.

Freud's Theory

We begin with the often controversial figure, Sigmund Freud (1856-1939). Freud has been a very influential figure in the area of

development; his view of development and psychopathology dominated the field of psychiatry until the growth of behaviorism in the 1950s. His assumptions that personality forms during the first few years of life and that the ways in which parents or other caregivers interact with children have a long-lasting impact on children's emotional states have guided parents, educators, clinicians, and policy-makers for many years. We have only recently begun to recognize that early childhood experiences do not always result in certain personality traits or emotional states. There is a growing body of literature addressing resilience in children who come from harsh backgrounds and yet develop without damaging emotional scars (O'Grady and Metz, 1987). Freud has stimulated an enormous amount of research and generated many ideas. Agreeing with Freud's theory in its entirety is hardly necessary for appreciating the contribution he has made to the field of development.

Freud's theory of self suggests that there are three parts of the self. The **id** is the part of the self that is inborn. It responds to biological urges without pause and is guided by the principle of pleasure: if it feels good, it is the thing to do. A newborn is all id. The newborn cries when hungry, defecates when the urge strikes.

The **ego** develops through interaction with others and is guided by logic or the reality principle. It has the ability to delay gratification. It knows that urges have to be managed. It mediates between the id and **superego** using logic and reality to calm the other parts of the self.

The superego represents society's demands for its members. It is guided by a sense of guilt. Values, morals, and the conscience are all part of the superego.

The personality is thought to develop in response to the child's ability to learn to manage biological urges. Parenting is important here. If the parent is either overly punitive or lax, the child may become fixated and not progress to the next stage. Here is a brief introduction to Freud's stages.

Frustration, Overindulgence, and Fixation

Some people do not seem to be able to leave one stage and proceed on to the next. One reason for this may be that the needs of the developing individual at any particular stage may not have been adequately met in which case there is frustration. Or possibly the person's needs may have been so well satisfied that he/she is reluctant to leave the psychological benefits of a particular stage in which there is overindulgence. Both frustration and overindulgence (or any combination of the two) may lead to what psychoanalysts call **fixation** at a particular psychosexual stage. Fixation refers to the theoretical notion that a portion of the individual's libido has been permanently 'invested' in a particular stage of his development.

Stages of Psychosexual Development

Oral Stage

The **oral stage** lasts from birth until around age 2. The infant is all id. At this stage, stimulation and comfort are focused on the mouth and are based on the
reflex of sucking. Too much indulgence or too little stimulation may lead to fixation, resulting in a person continuing to see oral stimulation and comfort well beyond infancy. Of much focus is how parents manage the weaning process as a cause for fixation.

Children weaned too early or too late may seek ongoing oral stimulation.

Anal Stage

The **anal stage** begins around 18 months of age and lasts until the child is three years old. During the anal stage, Freud believed that the libido source shifted from the mouth (in stage 1) to the anus and the ego is beginning to develop in this stage. The child, then, receives pleasure from defecating. The child, at this point, understands that they have some amount of control over their lives, including control of when and where they defecate. This can set-up difficulties in potty training. What matters, in terms of Freud's theory, is how the parent handles difficulties in potty training. Poor parental reactions during potty training may result in anal fixation; the fixated child may react in one of two ways: (1) parents who are harsh or who ridicule the child for mistakes may have children who stubbornly hold on to their feces in an effort to not have an accident – these children may become anal retentive or (2) parents who are too easy-going may have a child who reacts by purposefully making a mess – these children may become anal expulsive. Adults who are anal retentive tend to be stubborn, very neat, rigid, and stingy. Adults who are anal expulsive tend to be messy, wasteful, and harsh.

Link to Learning: Toilet TRaining

To the relief of most parents, there is very little evidence to suggest that Freud was right about fixations caused during the anal stage, mainly because the theory itself would be very difficult to test. Nevertheless, parents worry

about toilet training, and whether they will be able to guide their children through the process unscathed. Kidshealth.org has a good web page on to potty training that may help parents worried about toilet training.

Phallic Stage

The phallic stage of psychosexual development occurs from ages three to six. According to Freud, during the **phallic stage,** the child develops an attraction to the opposite sex parent, which is called the Oedipus Complex for boys and the Electra Complex for girls. When the child recognizes that the opposite sex parent is unavailable, the child learns to model their own behavior after the same-sex parent. The child develops their own sense of masculinity or femininity from this resolution. According to Freud, a person who does not exhibit gender appropriate behavior, such as a woman who competes with men for jobs or a man who lacks self-assurance and dominance, has not successfully completed this stage of development. Consequently, such a person continues to struggle with his or her own gender identity.

Chodorow, a neo-Freudian, believed that mothering promotes gender stereotypic behavior. Mothers push their sons away too soon and direct their attention toward problem-solving and independence. As a result, sons grow up confident in their own abilities but uncomfortable with intimacy. Girls are kept dependent too long and are given unnecessary and even unwelcome assistance from their mothers. Girls learn to underestimate their abilities and lack assertiveness but feel comfortable with intimacy.

Both of these models assume that early childhood experiences result in lifelong gender self-concepts. However, gender socialization is a process that continues throughout life. Children,

teens, and adults refine and can modify their sense of self, based on gender.

Another important part of Freud's phallic stage is that during this time the child is learning right from wrong through the process of **introjection**. Remember that according to Kohlberg, the child during this time is developing a sense of morality. According to Freud, this is occurring through the process of introjection which occurs as children incorporate values from others into their value set. Freud theorized about parental introjection, where children learn that parents seem pleased by certain behaviors (and so want to do those behaviors more to get rewards and love) and displeased by other behaviors (and so want to do those behaviors less to avoid punishment and loss of love). Today, modern psychoanalytic theorists recognize the place of others and society in introjection. Societal introjection is becoming more and more important as more children go to daycare, as we are more surrounded by technology and advertising, and as we travel more.

Latency Stage

Freud's fourth stage of psychosexual development is the latency stage. This stage begins around age 6 and lasts until puberty. In the latency stage, children are actually doing very little psychosexual development according to Freud. Where pleasure and development occurred through erogenous zones in the first 3 stages, in the latency stage all pleasure from erogenous zones is repressed. In other words, it is latent—hence the stage's name. Freud believed that in the latency stage all development and stimulation come from secondary sources since the erogenous forces are repressed. These secondary sources can include education, forming various social relationships, and hobbies.

Genital Stage

The genital stage is the last stage of Freud's psychosexual theory of personality development, and begins in puberty. It is a time of adolescent sexual experimentation, the successful resolution of which is settling down in a loving one-to-one relationship with another person in our 20's. Sexual instinct is directed to heterosexual pleasure, rather than self-pleasure like during the phallic stage.

For Freud, the proper outlet of the sexual instinct in adults was through heterosexual intercourse. Fixation and conflict may prevent this with the consequence that sexual perversions may develop. For example, fixation at the oral stage may result in a person gaining sexual pleasure primarily from kissing and oral sex, rather than sexual intercourse.



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Video 1. *Freud's Psychosexual Stages of Development.*

Strengths and Weaknesses of Freud's Theory

Freud's theory has been heavily criticized for several reasons. One is that it is very difficult to test the unconscious mind scientifically. How can parenting in infancy be traced to personality in adulthood? Are there other variables that might better explain development?

The theory is also considered to be sexist in suggesting that women who do not accept an inferior position in society are somehow psychologically flawed. Freud focuses on the darker side of human nature and suggests that
much of what determines our actions are unknown to us. So why do we study Freud? As mentioned above, despite the criticisms, Freud's assumptions about the importance of early childhood experiences in shaping our psychological selves have found their way into child development, education, and parenting practices. Freud's theory has heuristic value in providing a framework from which to elaborate and modify subsequent theories of development. Many later theories, particularly behaviorism and humanism, were challenges to

Erikson's Stages of Psychosexual Development



Erik Erikson's theory of psychosocial development emphasizes the social nature of our development. His theory proposed that our psychosocial development takes place throughout our lifespan. Erikson suggested that how we interact with others is what affects our sense of self, or what he called the ego identity. He also believed that we are motivated by a need to achieve competence in certain areas of our lives.

According to psychosocial theory, we experience eight stages of development over our lifespan (Table 8.1), from infancy through late adulthood. At each stage, there is a conflict, or task, that we need to resolve. Successful completion of each developmental task results in a sense of competence and a healthy personality. Failure to master these tasks leads to feelings of inadequacy.

Figure 1. Erik Erikson

Table 1. Erikson's psychosocial Stages of Development

Stage	Age (years)	Developmental Task	Description
1	0–1	Trust vs. mistrust	Trust (or mistrust) that basic needs, such as nourishment and affection, will be met
2	1–3	Autonomy vs. shame/doubt	Develop a sense of independence in many tasks
3	3–6	Initiative vs. guilt	Take the initiative on some activities—may develop guilt when unsuccessful or boundaries overstepped
4	7–11	Industry vs. inferiority	Develop self-confidence in abilities when competent or sense of inferiority when not
5	12–18	Identity vs. confusion	Experiment with and develop identity and roles
6	19–29	Intimacy vs. isolation	Establish intimacy and relationships with others
7	30–64	Generativity vs. stagnation	Contribute to society and be part of a family
8	65–	Integrity vs. despair	Assess and make sense of life and meaning of contributions



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https://childpsychology.pressbooks.sunycreate.cloud/?p=97#oembed-1

Video 2. Erikson's Psychosocial Development explains all stages of this theory.

Trust vs. mistrust



Erikson maintained that the first year to year and a half of life involves the establishment of a sense of trust. Infants are dependent and must rely on others to meet their basic physical needs as well as their needs for stimulation and comfort. A caregiver who consistently meets these needs instills a sense of trust or the belief that the world is a safe and trustworthy place. The caregiver should not worry about overindulging a child's need for comfort, contact, or stimulation. This view is in sharp contrast with the Freudian view that a parent who overindulges the infant by allowing them to suck too long or be picked up too frequently will be spoiled or become fixated at the oral stage of development.

Consider the implications for establishing trust if a caregiver is unavailable or is upset and ill-prepared to care for a child, or if a child is born prematurely, is unwanted, or has physical problems that could make them less desirable to a parent. However, keep in mind that children can also exhibit strong resiliency to harsh circumstances. Resiliency can be attributed to certain personality

factors, such as an easy-going temperament and receiving support from others. A positive and strong support group can help a parent and child build a strong foundation by offering assistance and positive attitudes toward the newborn and parent.



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Autonomy vs. shame and doubt

As the child begins to walk and talk, an interest in independence or autonomy replaces their concern for trust. The toddler tests the limits of what can be touched, said, and explored. Erikson believed that toddlers should be allowed to explore their environment as freely as safety allows and, in doing so, will develop a sense of independence that will later grow to self-esteem, initiative, and overall confidence. If a caregiver is overly anxious about the toddler's actions for fear that the child will get hurt or violate others' expectations, the caregiver can give the child the message that they should be ashamed of their behavior and instill a sense of doubt in their abilities. Parenting advice based on these ideas would be to keep your toddler safe, but let them learn by doing. A sense of pride seems to rely on doing rather than being told how capable one is (Berger, 2005).

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://childpsychology.pressbooks.sunycreate.cloud/?p=97#oembed-5

Initiative vs. Guilt

While Erik Erikson was very influenced by Freud, he believed that the relationships that people have, not psychosexual stages, are what influence personality development. At the beginning of early childhood, the child is still in the autonomy versus shame and doubt stage (stage 2).

By age three, the child begins stage 3: initiative versus guilt. The trust and autonomy of previous stages develop into a desire to take initiative or to think of ideas and initiate action. Children are curious at this age and start to ask questions so that they can learn about the world. Parents should try to answer those questions without making the child feel like a burden or implying that the child's question is not worth asking.

These children are also beginning to use their imagination (remember what we learned when we discussed Piaget!). Children may want to build a fort with the cushions from the living room couch, open a lemonade stand in the driveway, or make a zoo with their stuffed animals and issue tickets to those who want to come. Another way that children may express autonomy is in wanting to get themselves ready for bed without any assistance. To reinforce taking initiative, caregivers should offer praise for the child's efforts and avoid being overly critical of messes or mistakes. Soggy washrags and toothpaste left in the sink pale in

comparison to the smiling face of a five-year-old emerging from the bathroom with clean teeth and pajamas!

That said, it is important that the parent does their best to kindly guide the child to the right actions. Remember that according to Freud and Kohlberg, children are developing a sense of morality during this time. Erikson agrees. If the child does leave those soggy washrags in the sink, have the child help clean them up. It is possible that the child will not be happy with helping to clean, and the child may even become aggressive or angry, but it is important to remember that the child is still learning how to navigate their world. They are trying to build a sense of autonomy, and they may not react well when they are asked to do something that they had not planned. Parents should be aware of this, and try to be understanding, but also firm. Guilt for a situation where a child did not do their best allows a child to understand their responsibilities and helps the child learn to exercise self-control (remember the marshmallow test). The goal is to find a balance between initiative and guilt, not a free-for-all where the parent allows the child to do anything they want to. The parent must guide the child if they are to have a successful resolution in this stage.

watch it

Video 3. Movies, television, and media, in general, provide many examples of psychosocial development. The movie clips in this video demonstrate Erikson's third stage of development, initiative versus guilt. What other examples can you think of to demonstrate young children developing a sense of autonomy?

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Industry vs. Inferiority

As we have seen in previous modules, Erikson believes that children's greatest source of personality development comes from their social relationships. So far, we have seen 3 psychosocial stages: trust versus mistrust (ages birth – 18 months), autonomy versus shame and doubt (ages 18 months – 3 years), and initiative versus guilt (ages 3 years – around 6 years).

According to Erikson, children in middle childhood are very busy or industrious. They are constantly doing, planning, playing, getting together with friends, and achieving. This is a very active time and a time when they are gaining a sense of how they measure up when compared with friends. Erikson believed that if these industrious children view themselves as successful in their endeavors, they will get a sense of competence for future challenges. If instead, a child feels that they are not measuring up to their peers, feelings of inferiority and self-doubt will develop. These feelings of inferiority can, according to Erikson, lead to an inferiority complex that lasts into adulthood.

To help children have a successful resolution in this stage, they

should be encouraged to explore their abilities. They should be given authentic feedback as well. Failure is not necessarily a horrible thing according to Erikson. Indeed, failure is a type of feedback that may help a child form a sense of modesty. A balance of competence and modesty is ideal for creating a sense of competence in the child.



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Identity vs. Identity Confusion

Erik Erikson believed that the primary psychosocial task of adolescence was establishing an identity. Erikson referred to life's fifth psychosocial task as one of **identity versus identity confusion** when adolescents must work through the complexities of finding one's own identity. This stage includes questions regarding their appearance, vocational choices and career aspirations, education, relationships, sexuality, political and social views, personality, and interests. Erikson saw this as a period of confusion and experimentation regarding identity and one's life path. During adolescence, we experience a **psychological moratorium**, where teens put on hold commitment to an identity while exploring the options.

Individual identity development is influenced by how they resolved all of the previous childhood psychosocial crises, and this adolescent stage is a bridge between the past and the future, childhood, and adulthood. Thus, in Erikson's view, an adolescent's

central questions are, "Who am I?" and "Who do I want to be?" Identity formation was highlighted as the primary indicator of successful development during adolescence (in contrast to role confusion, which would be an indicator of not successfully meeting the task of adolescence). This crisis is resolved positively with **identity achievement** and the gain of fidelity (ability to be faithful) as a new virtue when adolescents have reconsidered the goals and values of their parents and culture. Some adolescents adopt the values and roles that their parents expect for them. Other teens develop identities that are in opposition to their parents but align with a peer group. This change is common as peer relationships become a central focus in adolescents' lives.

The culmination of this exploration is a more coherent view of oneself. Those who are unsuccessful at resolving this stage may withdraw further into social isolation or become lost in the crowd. However, more recent research suggests that few leave this age period with identity achievement and that most identity formation occurs during young adulthood (Côtè, 2006).



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Marcia's Identity Statuses

Expanding on Erikson's theory, Marcia (1966) described identity formation during adolescence as involving both *exploration* and *commitment* with respect to ideologies and occupations (e.g.,

religion, politics, career, relationships, gender roles). Identity development begins when individuals identify with role models who provide them with options to explore for whom they can become. As identity development progresses, adolescents are expected to make choices and commit to options within the confines of their social contexts. In some cases, options are not provided or are limited, and the individual will fail to commit or will commit without the opportunity to explore various options (Marcia, 1980).



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Video 4. Macia's Stages of Adolescent Identity Development summarizes the various identity statuses and how an individual may move through them.

Identity confusion/diffusion occurs when adolescents neither explore nor commit to any identities. **Foreclosure** occurs when an individual commits to an identity without exploring options. **A moratorium** is a state in which adolescents are actively exploring options but have not yet made commitments. As mentioned earlier, individuals who have explored different options, discovered their purpose, and have made identity commitments are in a state of **identity achievement.**



Figure 2. Marcia's identity statuses. Adapted from Discovering the Lifespan, by R. S. Feldman, 2009.

The least mature status, and one common in many children, is identity diffusion. **Identity diffusion** *is a status that characterizes those who have neither explored the options nor made a commitment to an identity*. Marcia (1980) proposed that when individuals enter the identity formation process, they have little awareness or experience with identity exploration or the expectation to commit to an identity. This period of identity diffusion is typical of children and young adolescents, but adolescents are expected to move out of this stage as they are exposed to role models and experiences that present them with identity possibilities. Those who persist in this identity may drift aimlessly with little connection to those around them or have little sense of purpose in life. Characteristics associated with prolonged diffusion include low self-esteem, easily influenced by peers, lack of meaningful friendships, little commitment, or fortitude in activities or relationships, self-absorbed, and self-indulgent.

Those in **identity foreclosure** *have committed to an identity without having explored the options*. Often, younger adolescence will enter a phase of foreclosure where they may, at least preliminarily, commit to an identity without an investment in the exploration

process. This commitment is often a response to anxiety about uncertainty or change during adolescence or pressure from parents, social groups, or cultural expectations. It is expected that most adolescents will progress beyond the foreclosure phase as they can think independently, and we multiple identity options. However, sometimes foreclosure will persist into late adolescence or even adulthood.

In some cases, parents may make these decisions for their children and do not grant the teen the opportunity to make choices. In other instances, teens may strongly identify with parents and others in their life and wish to follow in their footsteps. Characteristics associated with prolonged foreclosure well-behaved and obedient children with a high need for approval, authoritarian parenting style, low levels of tolerance or acceptance of change, high levels of conformity, and conventional thinking.

During high school and college years, teens and young adults move from identity diffusion and foreclosure toward moratorium and achievement. The most significant gains in the development of identity are in college, as college students are exposed to a greater variety of career choices, lifestyles, and beliefs. This experience is likely to spur on questions regarding identity. A great deal of the identity work we do in adolescence and young adulthood is about values and goals, as we strive to articulate a personal vision or dream for what we hope to accomplish in the future (McAdams, 2013).

Identity moratorium is a status that describes those who are actively exploring in an attempt to establish identity but have yet to have made any commitment. This time can be an anxious and emotionally tense period as the adolescent experiments with different roles and explores various beliefs. Nothing is guaranteed, and there are many questions, but few answers. This moratorium phase is the precursor to identity achievement. During the moratorium period, it is normal for adolescents to be rebellious and uncooperative, avoid dealing with problems, procrastinate,

experience low self-esteem, feel anxious, and uncertain about decisions.

Identity achievement refers to those who, after exploration, have committed. Identity achievement is a long process and is not often realized by the end of adolescence. Individuals that do reach identity achievement feel self-acceptance, stable self-definition, and are committed to their identity.

While Marcia's statuses help us understand the process of developing identity, there are several criticisms of this theory. First, identity status may not be global; different aspects of your identity may be in different statuses. An individual may be in multiple identity statuses at the same time for different aspects of identity. For example, one could be in the foreclosure status for their religious identity, but in moratorium for career identity, and achievement for gender identity.

Further, identity statuses do no always develop in the sequence described above, although it is the most common progression. Not all people will reach identity achievement in all aspects of their identity, and not all may remain in identity achievement. There may be a third aspect of identity development, beyond exploration and commitment, and that is the reconsideration of commitment. This addition would create a fifth status, **searching moratorium**. This status is a re-exploring after a commitment has been made (Meesus et al., 2012). It is not usual that commitments to aspects of our identity may change as we gain experiences, and more options become available to explore. This searching moratorium may continue well into adulthood.



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Supporting Identity Development

As the process of identity development can be a confusing and challenging period, how can adults support adolescents through this process? First, affirm that the anxiety, doubts, and confusion are reasonable and that most teens do not complete identity achievement before graduating high school. Exposing adolescents to various role models can help them imagine different roles or options for their future selves. Role models can come from within the family, schools, or community. Adults should talk with adolescents about their values, goals, and identities to help build awareness. They may be interested to know how others made decisions while developing their own identities. Finally, support the commitments that adolescents have made. Identity commitments can help someone feel grounded and less confused while they engage in identity exploration.

Domains of Identity

As mentioned previously, there are several significant areas of identity development, and each domain may progress through the identity development process independently. Some of the most widely studied domains of identity development include cultural, gender, sexual, ideological, and occupational identity.

Cultural Identity

Cultural identity: Cultural identity refers to how people come to terms with whom they are based on their ethnic, racial, and cultural ancestry. According to the U.S. Census (2012), more than 40% of Americans under the age of 18 are from ethnic minorities. At this point, you are probably aware of the cultural groups to which you belong (i.e., "I am a Latino, middle-class, (almost) college-educated male"). Do you remember the process of coming to awareness of your cultural identity—when did you know you were white and what that meant? Was it during childhood, as a teenager, or reading this chapter? Has your understanding, or acceptance, of your racial heritage changed during your lifetime?

For most people, it does. Just as Piaget organized the growth of children according to various stages of development, cultural scholars have similarly organized racial awareness along models and stages. Before explaining the various models, let us make a couple of general comments about models. One, a model is not the thing it represents. Is the model car you played with as a child the same as the actual automobile? What were the differences? Size, time, maneuverability, details? These same kinds of differences exist between the model of racial identity development and the actual personal process. However, just like the car model gives a

relatively accurate picture of the actual automobile, so do the racial identity models. Two, these models are general and not meant to fit perfectly to every individual's experience. With that said, let us examine the process of coming to an understanding of our racial identity.



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https://childpsychology.pressbooks.sunycreate.cloud/?p=98#oembed-1

Video 1. *Demographic Structure of Society–Race and Ethnicity* provides more information on the structures of race and ethnicity and how minority and majority identity is constructed.

To better understand this complex process, and in recognition of the above discussion regarding the distinctions in experiences for various cultural groups, we will present four cultural identity models—-*Minority*, *Majority*, *Bi-racial*, *and Global Nomads*.

Minority Identity Development

Acculturation is a process of social, psychological, and cultural change that stems from the balancing of two cultures while adapting to the prevailing culture of the society. Acculturation is a process in which an individual adopts, acquires, and adjusts to a new cultural environment. Individuals of a differing culture try to incorporate themselves into the more prevalent culture by participating in aspects of the more prevalent culture, such as their traditions, but still hold onto their original cultural values and

traditions. The effects of acculturation can be seen at multiple levels in both the devotee of the prevailing culture and those who are assimilating into the culture (Cole, 2018).

At the individual level, the process of acculturation refers to the socialization process by which someone from outside of the dominant culture blends the values, customs, norms, cultural attitudes, and behaviors of the dominant culture. This process has been linked to changes in daily behavior, as well as numerous changes in psychological and physical well-being. As enculturation is used to describe the process of first-culture learning, acculturation can be thought of as second-culture learning.

The fourfold model is a bilinear model that categorizes acculturation strategies along two dimensions. The first dimension concerns the retention or rejection of an individual's minority or native culture (i.e. "Is it considered to be of value to maintain one's identity and characteristics?"). Whereas the second dimension concerns the adoption or rejection of the dominant group or host culture. ("Is it considered to be of value to maintain relationships with the larger society?") From this, four acculturation strategies emerge (Berry, 1997).

		Attitude toward individual's minority culture	
		Rejection	Retention
Attitude toward dominant group culture	Adopt	Assimilation	Integration
	Reject	Marginalization	Separation

Figure 1. Berry's acculturation model.

- **Assimilation** occurs when individuals adopt the cultural norms of a dominant or host culture over their original culture. Sometimes this is forced by the dominant culture.
- **Separation** occurs when individuals reject the dominant or host culture in favor of preserving their culture of origin. Separation is often facilitated by immigration to ethnic enclaves.
- **Integration** occurs when individuals can adopt the cultural norms of the dominant or host culture while maintaining their culture of origin. Integration leads to, and is often synonymous with, biculturalism.
- **Marginalization** occurs when individuals reject both their culture of origin and the dominant culture.

Studies suggest that individuals' respective acculturation strategies can differ between their private and public life spheres (Arends-Tóth & van de Vijver, 2004). For instance, an individual may reject the values and norms of the dominant culture in his private life (separation), while simultaneously adapting to the dominant culture in public parts of his life (i.e., integration or assimilation).

Because people who identify as members of a minority group in the United States tend to stand out or get noticed as "other" or "different," they also tend to become aware of their identity sooner than individuals who are part of the majority group. For many ethnic minority teens, discovering one's ethnic identity is an integral part of identity formation. Phinney (1989) proposed a model of ethnic identity development that included stages of unexplored ethnic identity, ethnic identity search, and achieved ethnic identity.

Stage 1: Unexamined Identity. As the name of this stage suggests, the person in stage one of Phinney's model has little or no concern with ethnicity. They may be too young to pay attention to such matters or just not see the relationship between racial identity and

their own life. One may accept the values and beliefs of the majority culture, even if they work against their cultural group.

Stage 2: Conformity. In stage two, the individual moves from a passive acceptance of the dominant culture's value system to a more active one. They consciously make choices to assimilate or fit in with the dominant culture even if this means putting down or denying their heritage. They may remain at this stage until a precipitating event forces them to question their belief system.

Stage 3: Resistance and Separation. The move from stage two to stage three can be a complicated process as it necessitates a certain level of critical thinking and self-reflection. If you have ever tried to wrestle with aspects of your belief system, then you can imagine the struggle. The move may be triggered by a national event such as the case of "Michael Brown, an unarmed black teenager, was shot and killed on August 9, by Darren Wilson, a white police officer, in Ferguson, MO (Buchanan). It may be fostered on a more individual scale, such as enrolling in a Women's Studies class and learning about the specifics of women's history in America. Martin Luther King Jr. moved to this stage around age six after the mother of King's White neighborhood friends told them that he could not play with her children anymore because he was Black. A person in this stage may simply reject all of their previously held beliefs and positive feelings about the dominant culture with those of their group, or they may learn how to critically examine and hold beliefs from a variety of cultural perspectives, which leads to stage four.

Stage 4: Integration. The final stage is one where the individual reaches an achieved identity. They learn to value diversity, seeing race, gender, class, and ethnic relations as a complex process instead of an either/or dichotomy. Their aim is to end oppression against all groups, not just their own.

Majority Identity Development

Since White is still considered normative in the United States, White people may take their identity and the corresponding privilege for granted. While we are using the following four stages of development to refer to racial and ethnic identity development, they may also be useful when considering other minority aspects of our identity, such as gender, class, or sexual orientation. Moreover, there is no set age or time period that a person reaches or spends in a particular stage, and not everyone will reach the final stage.

The following model was developed by Rita Hardiman (1994) and contains some similarities with Phinney's minority identity development model.

Stage 1: Unexamined Identity. This stage is the same for both minority and majority individuals. While children may notice that some of their playmates have different colored skin, they do not fear or feel superior to them.

Stage 2: Acceptance. The move to stage two signals a passive or active acceptance of the dominant ideology—either way, the individual does not recognize that he or she has been socialized into accepting it. When a White person goes the route of passive acceptance, they have no conscious awareness of being White. However, they may hold some subtly racist assumptions such as "[p]eople of color are culturally different, whereas Whites are individuals with no group identity, culture, or shared experience of racial privilege." Alternatively, White art forms are "classical," whereas works of art by people of color are considered "ethnic art," "folk art," or "crafts" (Martin and Nakayama 132). People in this stage may minimize contact with minorities or act in a "let me help you" fashion toward them. If a White person in this stage follows the active acceptance path, then they are conscious of their White identity and may act in ways that highlight it. Refusing to eat food from other cultures or watch foreign films are examples of the active acceptance path.

Stage 3: Resistance. Just as the move from stage two to stage three in the minority development model required a great deal of critical thought, so does this juncture. Here the members of the majority group cease blaming the members of minority groups for their conditions and see socioeconomic realities as a result of an unjust and biased sociopolitical system. There is an overall move from seeing one's station in life as a purely individual event or responsibility to a more systemic issue. Here, people may feel guilty about being White and ashamed of some of the historical actions taken by some White people. They may try to associate with only people of color, or they may attempt to exorcise aspects of White privilege from their daily lives.

Stage 4: Redefinition. In this stage, people attempt to redefine what it means to be White without the racist baggage. They can move beyond White guilt and recognize that White people and people of all cultures contain both racist and nonracist elements and that there are many historical and cultural events of which White people can be proud.

Stage 5: Integration. In the last phase, individuals can accept their Whiteness or other majority aspects of their identity and integrate it into other parts of their lives. There are simultaneous self-acceptance and acceptance of others.

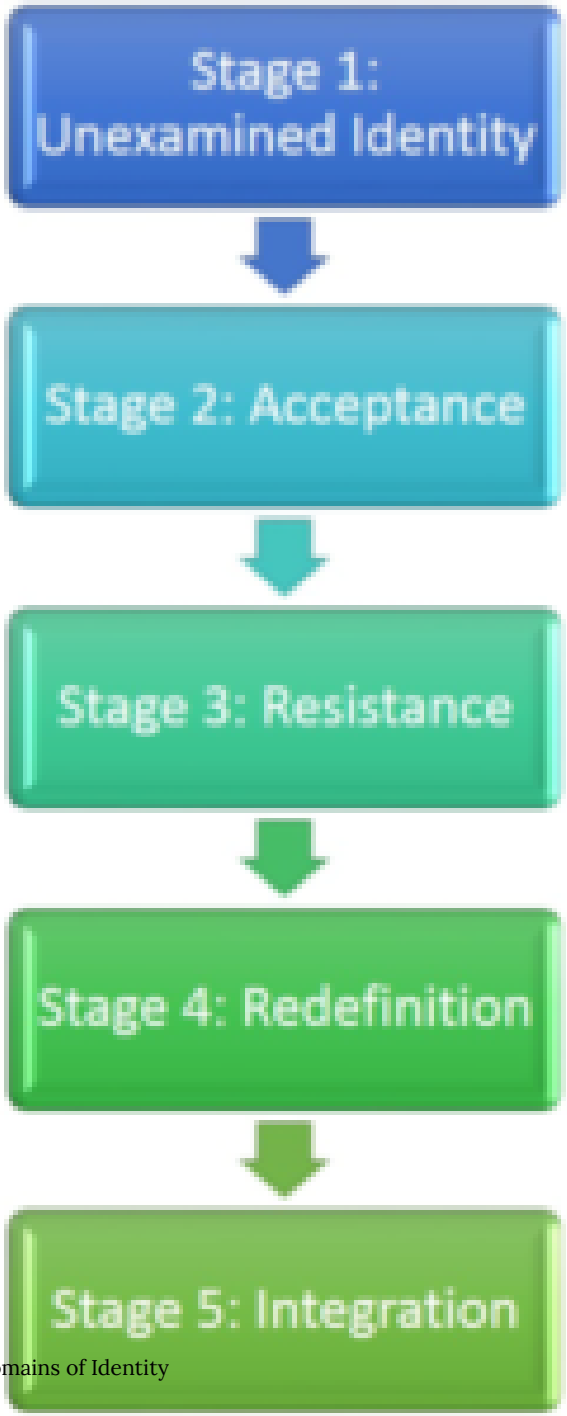

Stage 1: Unexamined Identity
Stage 2: Acceptance
Stage 3: Resistance
Stage 4: Redefinition
Stage 5: Integration

Figure 2. Hardiman's stages of majority identity development

Bi- or Multiracial Identity Development

Originally, people thought that bi-racial individuals followed the development model of minority individuals. However, given that we now know that race is a social construct, it makes sense to realize that a person of mixed racial ancestry is likely to be viewed differently (from both the dominant culture and the individual's own culture) than a minority individual. Thus, they are likely to experience a social reality unique to their experience. The following five-stage model is derived from the work of W.S. Carlos Poston.

Stage 1: Personal Identity. Poston's first stage is much like the unexamined identity stage in the previous two models. Again, children are not aware of race as a value-based social category and derive their personal identity from individual personality features instead of cultural ones.

Stage 2: Group Categorization. In the move from stage one to two, the person goes from no racial or cultural awareness to having to choose between one or the other. In a family where the father is Black, and the mother is Japanese, the child may be asked by members of both families to decide if he or she is Black or Japanese. Choosing both is not an option at this stage.

Stage 3: Enmeshment/Denial. Following the choice made in stage two, individuals attempt to immerse themselves in one culture while denying ties to the other. This process may result in guilt or feelings of distance from the parent and family whose culture was rejected in stage two. If these feelings are resolved, then the child moves to the next stage. If not, they remain here.

Stage 4: Appreciation. When feelings of guilt and anger are resolved, the person can work to appreciate all of the cultures that shape their identity. While there is an attempt to learn about the

diversity of their heritage, they will still identify primarily with the culture chosen in stage two.

Stage 5: Integration. In the fifth and final stage, the once fragmented parts of the person's identity are brought together to create a unique whole. There is an integration of cultures throughout all facets of a person's life—dress, food, holidays, spirituality, language, and communication.

Global Nomads

People who move around a lot may develop a multicultural identity as a result of their extensive international travel. International teachers, business people, and military personnel are examples of global nomads (Martin & Nakayama). One of the earlier theories to describe this model of development was called the U-curve theory because the stages were thought to follow the pattern of the letter U. The model has since been revised in the form of a W or a series of ups and downs. This pattern is thought better to represent the up and down nature of this process.

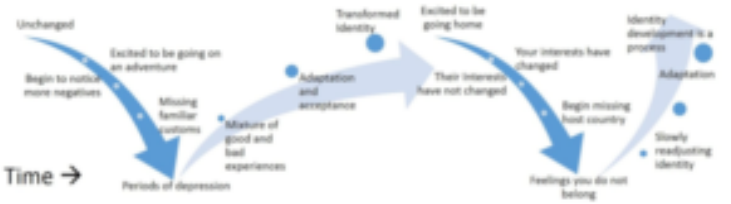


Figure 3. Identity development model for global nomads.

Stage 1: Anticipation and Excitement. If you have ever planned for an international trip, what were some of the things you did to prepare? Did you do something like buy a guidebook to learn some

of the native customs, figure out the local diet to see if you would need to make any special accommodations, learn the language, or at least some handy phrases perhaps? All of these acts characterize stage one in which people are filled with positive feelings about their upcoming journey and try to ready themselves.

Stage 2: Culture Shock. Once the excitement has worn off or you are confronted with an unexpected or unpleasant event, you may experience culture shock. This experience is the move from the top of the U or W to the bottom. Culture shock can result from physical, psychological, or emotional causes often correlating with an unpleasant and unfamiliar event. When individuals have spent most of their lives in a particular country, they will most likely experience culture shock when they travel overseas. The differences in cultural language, customs, and even food may be overwhelming to someone that has never experienced them before.

Stage 3: Adaptation. The final stage at the top of the U and W is a feeling of comfortableness: being somewhat familiar with the new cultural patterns and beliefs. After spending more time in a new country and learning its cultural patterns and beliefs, individuals may feel more welcomed into the society by accepting and adapting to these cultural differences.

Gender Identity, Gender Constancy, and Gender Roles



Gender identity is one's self-conception of their gender. Sex is the term to refer to the biological differences between males and females, such as genitalia and genetic differences. While gender

refers to the socially constructed characteristics of women and men, such as norms, roles, and relationships between groups of women and men. **Cisgender** is an umbrella term used to describe people whose sense of personal identity and gender corresponds with their birth sex, while **transgender** is a term used to describe people whose sense of personal identity does not correspond with their birth sex.

Gender expression, or how one demonstrates gender (based on traditional gender role norms related to clothing, behavior, and interactions), can be feminine, masculine, androgynous, or somewhere along a spectrum. Many adolescents use their analytic, hypothetical thinking to question traditional gender roles and expression. If their genetically assigned sex does not line up with their gender identity, they may refer to themselves as transgender, non-binary, or gender-nonconforming.

Preschool-aged children become increasingly interested in finding out the differences between boys and girls both physically and in terms of what activities are acceptable for each. While two-year-olds can identify some differences and learn whether they are boys or girls, preschoolers become more interested in what it means to be male or female. This self-identification, or gender identity, is followed sometime later with gender constancy, or the understanding that superficial changes do not mean that gender has actually changed. For example, if you are playing with a two-year-old boy and put barrettes in his hair, he may protest saying that he doesn't want to be a girl. By the time a child is four years old, they have a solid understanding that putting barrettes in their hair does not change their gender.

Children learn at a young age that there are distinct expectations for boys and girls. Cross-cultural studies reveal that children are aware of gender roles by age two or three. At four or five, most children are firmly entrenched in culturally appropriate gender roles (Kane 1996). Children acquire these roles through socialization, a process in which people learn to behave in a particular way as dictated by societal values, beliefs, and attitudes.

Children may also use gender stereotyping readily. Gender stereotyping involves overgeneralizing the attitudes, traits, or behavior patterns of women or men. A recent research study examined four- and five-year-old children's predictions concerning the sex of the persons carrying out a variety of common activities and occupations on television. The children's responses revealed strong gender-stereotyped expectations. They also found that children's estimates of their own future competence indicated stereotypical beliefs, with the females more likely to reject masculine activities.

Children who are allowed to explore different toys, who are exposed to non-traditional gender roles, and whose parents and caregivers are open to allowing the child to take part in non-traditional play (allowing a boy to nurture a doll, or allowing a girl to play doctor) tend to have broader definitions of what is gender appropriate, and may do less gender stereotyping.

Fluidity and uncertainty regarding sex and gender are especially common during early adolescence when hormones increase and fluctuate, creating a difficulty of self-acceptance and identity achievement (Reisner et al., 2016). Gender identity is becoming an increasingly prolonged task as attitudes and norms regarding gender keep changing. The roles appropriate for males and females are evolving, and some adolescents may foreclose on a gender identity as a way of dealing with this uncertainty by adopting more stereotypic male or female roles (Sinclair & Carlsson, 2013). Those that identify as transgender or 'other' face even more significant challenges.

Watch It

Video 2. This clip from Upworthy shows how some

children were surprised to meet women in traditionally male occupations.



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Stages of Gender Identity Development

The National Center on Parent, Family, and Community Engagement identified several stages of gender identity development, as outlined below.

Infancy. Children observe messages about gender from adults' appearances, activities, and behaviors. Most parents' interactions with their infants are shaped by the child's gender, and this in turn also shapes the child's understanding of gender (Fagot & Leinbach, 1989; Witt, 1997; Zosuls, Miller, Ruble, Martin, & Fabes, 2011).

18–24 months. Toddlers begin to define gender, using messages from many sources. As they develop a sense of self, toddlers look for patterns in their homes and early care settings. Gender is one way to understand group belonging, which is important for secure development (Kuhn, Nash & Brucken, 1978; Langlois & Downs, 1980; Fagot & Leinbach, 1989; Baldwin & Moses, 1996; Witt, 1997; Antill, Cunningham, & Cotton, 2003; Zoslus, et al., 2009).

Ages 3–4. Gender identity takes on more meaning as children

begin to focus on all kinds of differences. Children begin to connect the concept "girl" or "boy" to specific attributes. They form stronger rules or expectations for how each gender behaves and looks (Kuhn, Nash, & Brucken 1978; Martin, Ruble, & Szkrybalo, 2004; Halim & Ruble, 2010).

Ages 5-6. At these ages, children's thinking may be rigid in many ways. For example, 5- and 6-year-olds are very aware of rules and of the pressure to comply with them. They do so rigidly because they are not yet developmentally ready to think more deeply about the beliefs and values that many rules are based on. For example, as early educators and parents know, the use of "white lies" is still hard for them to understand. Researchers call these ages the most "rigid" period of gender identity (Weinraub et al., 1984; Egan, Perry, & Dannemiller, 2001; Miller, Lurye, Zosuls, & Ruble, 2009). A child who wants to do or wear things that are not typical of his gender is probably aware that other children find it strange. The persistence of these choices, despite the negative reactions of others, shows that these are strong feelings. Gender rigidity typically declines as children age (Trautner et al., 2005; Halim, Ruble, Tamis-LeMonda, & Shrout, 2013). With this change, children develop stronger moral impulses about what is "fair" for themselves and other children (Killen & Stangor, 2001).

It is important to understand these typical and normal attempts for children to understand the world around them. It is helpful to encourage children and support them as individuals, instead of emphasizing or playing into gender roles and expectations. You can foster self-esteem in children of any gender by giving all children positive feedback about their unique skills and qualities. For example, you might say to a child, "I noticed how kind you were to your friend when she fell down" or "You were very helpful with clean-up today—you are such a great helper" or "You were such a strong runner on the playground today."

Encouraging Healthy Gender Development

You can see more of their resources and tips for healthy gender development by reading Healthy Gender Development and Young Children.

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Theories of Gender Identity Development

Biological Approach

The biological approach explores how gender identity development is influenced by genetics, biological sex characteristics, brain development, and hormone exposure.

Humans usually have 23 pairs of chromosomes, each containing thousands of genes that govern various aspects of our development. The 23rd pair of chromosomes are called the sex chromosomes. This pair determines a person's sex, among other functions. Most often, if a person has an XX pair, they will develop into a female, and if they have an XY pair, they will be male.

Around the sixth week of prenatal development, the SRY gene on the Y chromosome signals the body to develop as a male. This chemical signal triggers a cascade of other hormones that will tell the gonads to develop into testes. If the embryo does not have a Y or the if, for some reason, the SRY gene is missing or not activate, then the embryo will develop female characteristics. The baby is born and lives as a female, but genetically her chromosomes are XY. Rat studies have found that the reverse is also possible. Researchers implanted the SRY gene in rats with XX chromosomes, and the result was male baby mice.

Individuals with atypical chromosomes may also develop differently than their typical XX or XY counterparts. These chromosomal abnormalities include syndromes where a person may have only one sex chromosome or three sex chromosomes. Turner's Syndrome is a condition where a female has only one X chromosome (XO). This missing chromosome results in a female external appearance but lacking ovaries. These XO females do not mature through puberty like XX females and they may also have webbed skin around the neck. Cognitively, these females tend to have high verbal skills, poor spatial and math skills, and poor social adjustment.

Klinefelter's Syndrome is a condition where a male has an extra X chromosome (XXY). This XXY combination results in male genitals, although their genitals may be underdeveloped even into adulthood. Even after puberty, they tend to have less body and facial hair and may develop breasts. From infancy, these children often have a passive, cooperative, and shy personality that remains into adulthood. Cognitively, they are often late to talk and have poor language and reading skills.

As we learned in the physical development chapter, sex hormones cause biological changes to the body and brain. While the same-sex hormones are present in males and females, the amount of each hormone and the effect of that hormone on the body is different. Males have much higher levels of testosterone than females. In the womb, testosterone causes the development of male sex organs.

It also impacts the hypothalamus, causing an enlarged sexually dimorphic nucleus, and results in the 'masculinization' of the brain. Around the same time, testosterone may contribute to greater lateralization of the brain, resulting in the two halves working more independently of each other. Testosterone also affects what we often consider male behaviors, such as aggression, competitiveness, visual-spatial skills, and higher sex drive.

Cognitive Approaches

Cognitive learning theory states that children develop gender at their own levels. At each stage, the child thinks about gender characteristically. As a child moves forward through stages, their understanding of gender becomes more complex.

The following cognitive model, formulated by Kohlberg, asserts that children recognize their gender identity around age three but do not see it as relatively fixed until five to seven. This identity marker provides children with a schema, a set of observed or spoken rules for how social or cultural interactions should happen. Information about gender is gathered from the environment; thus, children look for role models to emulate maleness or femaleness as they grow.

Stage 1: Gender Labeling (2-3.5 years). The child can label their gender correctly.

Stage 2: Gender Stability (3.5-4.5 years). The child's gender remains the same across time.

Stage 3: Gender Constancy (6 years). The child's gender is independent of external features (e.g., clothing, hairstyle).

Once children form a basic gender identity, they start to develop gender schemas. These gender schemas are organized set of gender-related beliefs that influence behaviors. The formation of these schemas explains how gender stereotypes become so psychologically ingrained in our society.

According to Sandra Bem's Gender Schema Theory, gender schemas can be organized into four general categories. The **sex-type schema** is the belief that gender matches biological sex. **Sex-reversed schema** is when gender is the opposite of biological sex. Possessing both masculine and feminine traits is an **androgynous schema**. While possessing few masculine or feminine traits is an **undifferentiated schema**.

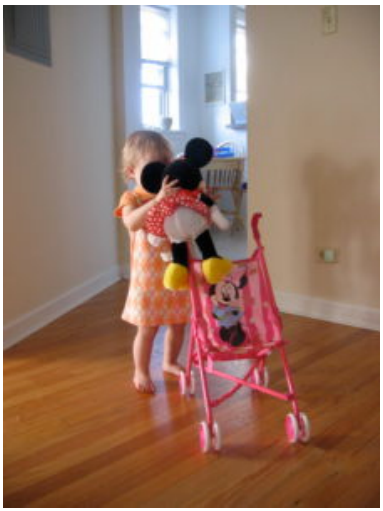
Social Learning Approach

Social Learning Theory suggests that gender role socialization is a result of how parents, teachers, friends, schools, religious institutions, media, and others send messages about what is acceptable or desirable behavior for males or females. if children receive positive reinforcement, they are motivated to continue a particular behavior. If they receive punishment or other indicators of disapproval, they are motivated to stop that behavior. In terms of gender development, children receive praise if they engage in culturally appropriate gender displays and punishment if they do not. When aggressiveness in boys is met with acceptance or a "boys will be boys" attitude, but a girl's aggressiveness earns them little attention, the two children learn different meanings for aggressiveness related to their gender development. Thus, boys may continue being aggressive while girls may drop it out of their repertoire.

This socialization begins early—in fact, it may even begin when a parent learns that a child is on the way. Knowing the sex of the child can conjure up images of the child's behavior, appearance, and potential on the part of a parent. And this stereotyping continues to guide perception through life. Consider parents of newborns. Shown a 7-pound, 20-inch baby, wrapped in blue (a color designating males) describe the child as tough, strong, and angry

when crying. Shown the same infant in pink (a color used in the United States for baby girls), these parents are likely to describe the baby as pretty, delicate, and frustrated when crying (Maccoby & Jacklin, 1987). Female infants are held more, talked to more frequently, and given direct eye contact, while male infants' play is often mediated through a toy or activity.

One way children learn gender roles is through play. Parents typically supply boys with trucks, toy guns, and superhero paraphernalia, active toys that promote motor skills, aggression, and solitary play. Daughters are often given dolls and dress-up apparel that foster nurturing, social proximity, and role play. Studies have shown that children will most likely choose to play with "gender appropriate" toys (or same-gender toys) even when cross-gender toys are available because parents give children positive feedback (in the form of praise, involvement, and physical closeness) for gender normative behavior (Caldera, Huston, and O'Brien 1998).



Sons are given tasks that take them outside the house and that have to be performed only on occasion, while girls are more likely to be given chores inside the home, such as cleaning or cooking, that are performed daily. Sons are encouraged to think for themselves when they encounter problems, and daughters are more likely to be given assistance even when they are working on an answer. This impatience is reflected in teachers waiting less time when asking a female student for an answer than when asking for a reply from a male student (Sadker and Sadker, 1994). Girls are given the message from teachers that they must try harder and endure in order to succeed

while boys' successes are attributed to their intelligence. Of course, the stereotypes of advisors can also influence which kinds of courses or vocational choices girls and boys are encouraged to make.

Friends discuss what is acceptable for boys and girls, and popularity may be based on modeling what is considered ideal behavior or appearance for the sexes. Girls tend to tell one another secrets to validate others as best friends, while boys compete for position by emphasizing their knowledge, strength or accomplishments. This focus on accomplishments can even give rise to exaggerating accomplishments in boys, but girls are discouraged from showing off and may learn to minimize their accomplishments as a result.

Gender messages abound in our environment. But does this mean that each of us receives and interprets these messages in the same way? Probably not. In addition to being recipients of these cultural expectations, we are individuals who also modify these roles (Kimmel, 2008).

One interesting recent finding is that girls may have an easier time breaking gender norms than boys. Girls who play with masculine toys often do not face the same ridicule from adults or peers that boys face when they want to play with feminine toys. Girls also face less ridicule when playing a masculine role (like doctor) as opposed to a boy who wants to take a feminine role (like caregiver).

The Impact of Gender Discrimination

How much does gender matter? In the United States, gender differences are found in school experiences. Even in college and professional school, girls are less vocal in class and much more at risk for sexual harassment from teachers, coaches, classmates, and professors. These gender differences are also found in social

interactions and in media messages. The stereotypes that boys should be strong, forceful, active, dominant, and rational, and that girls should be pretty, subordinate, unintelligent, emotional, and talkative are portrayed in children's toys, books, commercials, video games, movies, television shows, and music. In adulthood, these differences are reflected in income gaps between men and women (women working full-time earn about 74 percent of the income of men), in higher rates of women suffering rape and domestic violence, higher rates of eating disorders for females, and in higher rates of violent death for men in young adulthood.

Gender differences in India can be a matter of life and death as preferences for male children have been historically strong and are still held, especially in rural areas (WHO, 2010). Male children are given preference for receiving food, breast milk, medical care, and other resources. In some countries, it is no longer legal to give parents information on the sex of their developing child for fear that they will abort a female fetus. Clearly, gender socialization and discrimination still impact development in a variety of ways across the globe. Gender discrimination generally persists throughout the lifespan in the form of obstacles to education, or lack of access to political, financial, and social power.

Transgender Identity Development

Individuals who identify with a role that is different from their biological sex are called **transgender**. Approximately 1.4 million U.S. adults or .6% of the population are transgender, according to a 2016 report (Flores et al., 2016).

Transgender individuals may choose to alter their bodies through medical interventions such as surgery and hormonal therapy so that their physical being is better aligned with gender identity. They may also be known as male-to-female (MTF) or female-to-male (FTM). Not all transgender individuals choose to alter their bodies; many

will maintain their original anatomy but may present themselves to society as another gender. This expression is typically done by adopting the dress, hairstyle, mannerisms, or other characteristics typically assigned to another gender. It is important to note that people who cross-dress or wear clothing that is traditionally assigned to a different gender is not the same as identifying as transgender. Cross-dressing is typically a form of self-expression, entertainment, or personal style, and it is not necessarily an expression against one's assigned gender (APA 2008).

After years of controversy over the treatment of sex and gender in the American Psychiatric Association Diagnostic and Statistical Manual for Mental Disorders (Drescher 2010), the most recent edition, DSM-5, responded to allegations that the term "gender identity disorder" is stigmatizing by replacing it with "**gender dysphoria**." Gender identity disorder as a diagnostic category stigmatized the patient by implying there was something "disordered" about them. Removing the word "disorder" also removed some of the stigmas while still maintaining a diagnosis category that will protect patient access to care, including hormone therapy and gender reassignment surgery.

In the DSM-5, gender dysphoria is a condition of people whose gender at birth is contrary to the one with which they identify. For a person to be diagnosed with gender dysphoria, there must be a marked difference between the individual's expressed/experienced gender and the gender others would assign him or her, and it must continue for at least six months. In children, the desire to be of the other gender must be present and verbalized (APA, 2013). Changing the clinical description may contribute to greater acceptance of transgender people in society. A 2017 poll showed that 54% of Americans believe gender is determined by sex at birth, and 32% say society has "gone too far" in accepting transgender people; views are sharply divided along political and religious lines (Salam, 2018).

Many psychologists and the transgender community are now advocating an affirmative approach to transgender identity development. This approach advocates that gender non-conformity

is not a pathology but a normal human variation. Gender non-conforming children do not systemically need mental health treatment if they are not "pathological." However, caregivers of gender non-conforming children can benefit from a mixture of psycho-educational and community-oriented interventions. Some children or teens may benefit from counseling or other interventions to help them cope with familial or societal reactions to their gender nonconformity.

Studies show that people who identify as transgender are twice as likely to experience assault or discrimination as non-transgender individuals; they are also one and a half times more likely to experience intimidation (National Coalition of Anti-Violence Programs 2010; Giovanniello, 2013). Trans women of color are most likely to be victims of abuse. There are also systematic aggressions, such as "deadnaming," (whereby trans people are referred to by their birth name and gender), laws restricting transpersons from accessing gender-specific facilities (e.g., bathrooms), or denying protected-class designations to prevent discrimination in housing, schools, and workplaces. Organizations such as the National Coalition of Anti-Violence Programs and Global Action for Trans Equality work to prevent, respond to, and end all types of violence against transgender and homosexual individuals. These organizations hope that by educating the public about gender identity and empowering transgender individuals, this violence will end.

Like other domains of identity, stage models for transgender identity development have helped describe a typical progression in identity formation. Lev's Transgender Emergence Model looks at how trans people come to understand their identity. Lev is working from a counseling/therapeutic point of view, thus this model talks about what the individual is going through and the responsibility of the counselor.

Stage 1: Awareness. In this first stage of awareness, gender-variant people are often in great distress; the therapeutic task is

the normalization of the experiences involved in emerging as transgender.

Stage 2: Seeking Information/Reaching Out. In the second stage, gender-variant people seek to gain education and support about transgenderism; the therapeutic task is to facilitate linkages and encourage outreach.

Stage 3: Disclosure to Significant Others. The third stage involves the disclosure of transgenderism to significant others (spouses, partners, family members, and friends); the therapeutic task involves supporting the transgender person's integration in the family system.

Stage 4: Exploration (Identity & Self-Labeling). The fourth stage involves the exploration of various (transgender) identities; the therapeutic task is to support the articulation and comfort with one's gendered identity.

Stage 5: Exploration (Transition Issues & Possible Body Modification). The fifth stage involves exploring options for transition regarding identity, presentation, and body modification; the therapeutic task is the resolution of the decision and advocacy toward their manifestation.

Stage 6: Integration (Acceptance & Post-Transition Issues). In the sixth stage, the gender-variant person can integrate and synthesize (transgender) identity; the therapeutic task is to support adaptation to transition-related issues.

Sexual Identity

Sexual identity is how one thinks of oneself in terms of to whom one is romantically or sexually attracted (Reiter, 1989). Sexual identity may also refer to **sexual orientation identity**, which is when people identify or dis-identify with a sexual orientation or choose not to identify with a sexual orientation (APA, 2009). Sexual identity and sexual behavior are closely related to sexual orientation

but they are distinguished (Reiter, 1989), with *identity* referring to an individual's conception of themselves, *behavior* referring to actual sexual acts performed by the individual, and *sexual orientation* referring to romantic or sexual attractions toward persons of the opposite sex or gender, the same sex or gender, to both sexes or more than one gender, or no one.

Sexual orientation is typically discussed as four categories: *heterosexuality*, the attraction to individuals of the other sex; *homosexuality*, the attraction to individuals of the same sex; *bisexuality*, the attraction to individuals of either sex; and *asexuality*, no attraction to either sex. However, others view sexual orientation as less categorical and more of a continuum.

Alfred Kinsey was among the first to conceptualize sexuality as a continuum rather than a strict dichotomy of gay or straight. He created a six-point rating scale that ranges from exclusively heterosexual to exclusively homosexual (Figure 4). In his 1948 work, *Sexual Behavior in the Human Male*, Kinsey writes, "Males do not represent two discrete populations, heterosexual and homosexual. The world is not to be divided into sheep and goats … The living world is a continuum in each and every one of its aspects" (Kinsey, 1948).

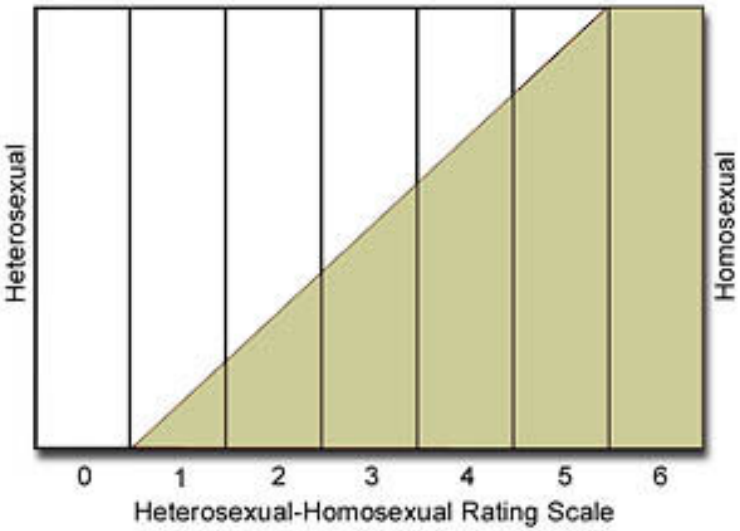


Figure 4. The Kinsey scale indicates that sexuality can be measured by more than just heterosexuality and homosexuality.

Later scholarship by Eve Kosofsky Sedgwick expanded on Kinsey's notions. She coined the term "homosocial" to oppose "homosexual," describing nonsexual same-sex relations. Sedgwick recognized that in U.S. culture, males are subject to a clear divide between the two sides of this continuum, whereas females enjoy more fluidity. This difference can be illustrated by the way women in the United States can express homosocial feelings (nonsexual regard for people of the same sex) through hugging, handholding, and physical closeness. In contrast, U.S. males refrain from these expressions since they violate the heteronormative expectation that male sexual attraction should be exclusively for females. Research suggests that it is easier for women to violate these norms than men because men are subject to more social disapproval for being physically close to other men (Sedgwick, 1985).

The issue of sexual identity and orientation can be further complicated when considering differences in romantic attraction

versus sexual attraction. A person could be romantically interested in the same sex, different sex, or any gender but could feel sexually attracted to the same or different group. For example, an individual could be interested in a romantic relationship with males but be sexually attracted to males and females. Alternatively, someone may be open to a romantic relationship with any gender but is primarily only sexually attracted to one sex.

The United States is a **heteronormative society**, meaning it assumes that heterosexuality is the norm and that sexual orientation is biologically determined and unambiguous. Consider that homosexuals are often asked, "When did you know you were gay?" but heterosexuals are rarely asked, "When did you know that you were straight?" (Ryle 2011). However, there is no scientific consensus regarding the exact reasons why an individual holds a particular sexual orientation. Research has been conducted to study the possible genetic, hormonal, developmental, social, and cultural influences on sexual orientation, but there has been no definitive evidence that links sexual orientation to one factor (APA, 2008).

According to current understanding, individuals are usually aware of their sexual orientation between middle childhood and early adolescence (APA, 2008). They do not have to participate in sexual activity to be aware of these emotional, romantic, and physical attractions; people can be celibate and still recognize their sexual orientation. Homosexual women (also referred to as lesbians), homosexual men (also referred to as gays), and bisexuals of both genders may have very different experiences of discovering and accepting their sexual orientation. At the point of puberty, some may be able to announce their sexual orientations, while others may be unready or unwilling to make their homosexuality or bisexuality known since it goes against U.S. society's historical norms (APA 2008).

Most of the research on sexual orientation identity development focuses on the development of people who are attracted to the same sex. Many people who feel attracted to members of their own sex 'come out' at some point in their lives. *Coming out* is described

in three phases. The first phase is the phase of "knowing oneself," and the realization emerges that one is sexually and emotionally attracted to members of one's own sex. This step is often described as an internal coming out and can occur in childhood or at puberty, but sometimes as late as age 40 or older. The second phase involves a decision to come out to others, e.g., family, friends, and/or colleagues. The third phase involves living openly as an LGBT person (Human Rights Campaign, 2007). In the United States today, people often come out during high school or college age. At this age, they may not trust or ask for help from others, especially when their orientation is not accepted in society. Sometimes they do not inform their own families.

According to Rosario, Schrimshaw, Hunter, Braun (2006), "the development of a lesbian, gay, or bisexual (LGB), sexual identity is a complex and often difficult process. Unlike members of other minority groups (e.g., ethnic and racial minorities), most LGB individuals are not raised in a community of similar others from whom they learn about their identity. Their identity may not be reinforced and supported by their community. Instead, "LGB individuals are often raised in communities that are either ignorant of or openly hostile toward homosexuality."

Cass' Homosexual Identity Model

Cass (1979) was one of the early creators of a model for explaining how individuals progress through the development of a homosexual identity. Cass proposed six stages. It may take several years to get through a particular stage and not all make it to stage 6. "Foreclosure" (when an individual denies their identity or hides it from others) can occur at any stage and halt the process.

Stage 1: Identity Awareness. The individual is aware of being "different" from others.

Stage 2: Identity Comparison. The individual compares their feelings and emotions to those they identify as heterosexual.

Stage 3: Identity Tolerance. The individual tolerates their identity as being non-heterosexual.

Stage 4: Identity Acceptance. The individual accepts their new identity and begins to become active in the "gay community."

Stage 5: Identity Pride. The individual becomes proud of their identity and becomes fully immersed in "gay culture."

Stage 6: Identity Synthesis. The individual fully accepts their identity and synthesizes their former "heterosexual life" and their new identity.

A criticism of Cass' model is that her research primarily studied white gay men and lesbian women of middle- to upper-class status. This stage model is not necessarily reflective of the process a bisexual or transgender individual may experience and, ultimately, may not be reflective of the process experienced by all non-heterosexual individuals.

Some individuals with unwanted sexual attractions may choose to actively dis-identify with a sexual minority identity, which creates a different sexual orientation identity from their actual sexual orientation. Sexual orientation identity, but not sexual orientation, can change through psychotherapy, support groups, and life events. A person who has homosexual feelings can self-identify in various ways. An individual may come to accept an LGB identity, to develop a heterosexual identity, to reject an LGB identity while choosing to identify as ex-gay, or to refrain from specifying a sexual identity (APA, 2009).

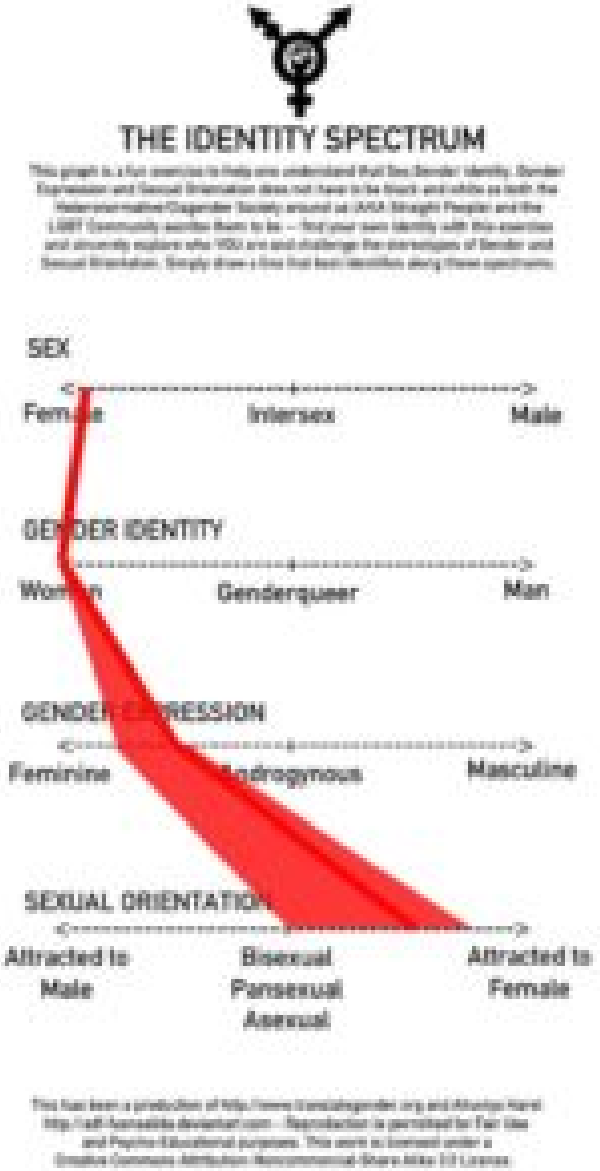

THE IDENTITY SPECTRUM
SEX
Intersex
Male
GENDER IDENTITY
Genderqueer
Man
Androgynous
Masculine
SEXUAL ORIENTATION
Attracted to Male
Bisexual
Pansexual
Asexual
Attracted to Female

Figure 5. This identity spectrum shows the fluidity between sex, gender identity, gender expression, and sexual orientation.

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https://childpsychology.pressbooks.sunycreate.cloud/?p=98#oembed-2

Video 3. *Demographic Structure of Society–Sex, Gender, and Sexual Orientation* explains various aspects of gender and sexual identity.

Ideological Group Identity

Religious identity is a specific type of identity formation. Particularly, it is the sense of group membership to a religion and the importance of this group membership as it pertains to one's self-concept. Religious identity is not necessarily the same as religiousness or religiosity. Although these terms share a commonality, religiousness and religiosity refer to both the value of religious group membership as well as participation in religious events (e.g., going to church) (Arweck & Nesbitt, 2010; King et al., 1997). Religious identity, on the other hand, refers specifically to religious group membership regardless of religious activity or participation.

Similar to other forms of identity formation, such as ethnic and cultural identity, the religious context can generally provide a perspective from which to view the world, opportunities to socialize with a spectrum of individuals from different generations, and a set of fundamental principles to live out (King

& Boratzis, 2004). These foundations can come to shape an individual's identity.

The religious views of teens are often similar to those of their families (Kim-Spoon, Longo, & McCullough, 2012). Most teens may question specific customs, practices, or ideas in the faith of their parents, but few reject the religion of their families entirely.

An adolescent's political identity is also influenced by their parents' political beliefs. A new trend in the 21st century is a decrease in party affiliation among adults. Many adults do not align themselves with either the democratic or republican party, and their teenage children reflect their parents' lack of party affiliation. Although adolescents do tend to be more liberal than their elders, especially on social issues (Taylor, 2014), like other aspects of identity formation, adolescents' interest in politics is predicted by their parents' involvement and by current events (Stattin et al., 2017).

Occupational Identity Development

While adolescents in earlier generations envisioned themselves as working in a particular job and often worked as an apprentice or part-time in such occupations as teenagers, this is rarely the case today. Occupational identity takes longer to develop, as most of today's occupations require specific skills and knowledge that will require additional education or are acquired on the job itself. Besides, many of the jobs held by teens are not in occupations that most teens will seek as adults. (See career development theories for more information).

Family Life

One of the ways to assess the quality of family life is to consider the tasks of families.

Berger (2005) lists five family functions:

1. Providing food, clothing, and shelter
2. Encouraging Learning
3. Developing self-esteem
4. Nurturing friendships with peers
5. Providing harmony and stability

Notice that in addition to providing food, shelter, and clothing, families are responsible for helping the child learn, relate to others, and have a confident sense of self. The family provides a harmonious and stable environment for living. A good home environment is one in which the child's physical, cognitive, emotional, and social needs are adequately met. Sometimes families emphasize physical needs, but ignore cognitive or emotional needs. Other times, families pay close attention to physical needs and academic requirements, but may fail to nurture the child's friendships with peers or guide the child toward developing healthy relationships. Parents might want to consider how it feels to live in the household. Is it stressful and conflict-ridden? Is it a place where family members enjoy being?

Parenting Styles



Relationships between parents and children continue to play a significant role in children's development during early childhood. We will explore two models of parenting styles. Keep in mind that most parents do not follow any model completely. Real people tend to fall somewhere in between these styles. And sometimes parenting styles change from one child to the next or in times when the parent has more or less time and energy for parenting. Parenting styles can also be affected by concerns the parent has in other areas of their life. For example, parenting styles tend to become more authoritarian when parents are tired and perhaps more authoritative when they are more energetic. Sometimes parents seem to change their parenting approach when others are around, maybe because they become more self-conscious as parents or are concerned with giving others the impression that they are a "tough" parent or an "easy-going" parent. And of course, parenting styles may reflect the type of parenting someone saw modeled while growing up.

Baumrind's Parenting Styles

Baumrind (1971) offers a model of parenting that includes three

styles. The first, **authoritarian**, is the traditional model of parenting in which parents make the rules and children are expected to be obedient. Baumrind suggests that authoritarian parents tend to place maturity demands on their children that are unreasonably high and tend to be aloof and distant. Consequently, children reared in this way may fear rather than respect their parents and, because their parents do not allow discussion, may take out their frustrations on safer targets – perhaps as bullies toward peers.

Permissive parenting involves being a friend to a child rather than an authority figure. Children are allowed to make their own rules and determine their own activities. Parents are warm and communicative but provide little structure for their children. Children may fail to learn self-discipline and may feel somewhat insecure because they do not know the limits.

Authoritative parenting involves being appropriately strict, reasonable, and affectionate. Parents allow negotiation where appropriate and discipline matches the severity of the offense. A popular parenting program that is offered in many school districts is called "Love and Logic" and reflects the authoritative or democratic style of parenting just described.

Today we recognize a fourth style within the Baumrind framework: **uninvolved parenting.** These parents are disengaged from their children. They do not make demands on their children and are non-responsive. These children can suffer in school and in their relationships with their peers (Gecas & Self, 1991).

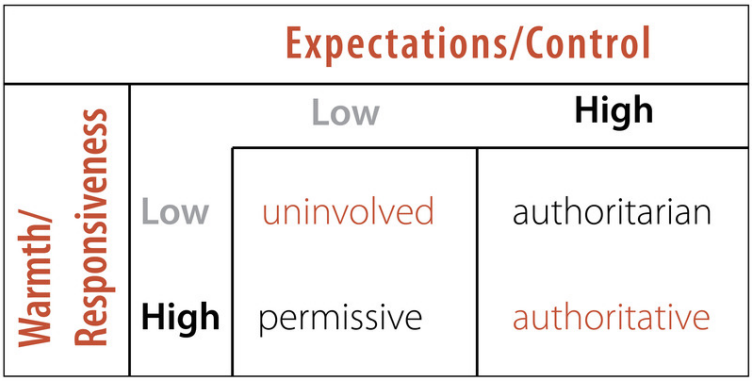


***Figure 1**. Parents who are both warm and responsive while still maintaining a high level of control are considered authoritative.*

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Lemasters and Defrain's Parenting Model

Lemasters and Defrain (1989) offered yet another model of parenting. This model is interesting because it looks more closely at the motivations of the parent and suggests that parenting styles are often designed to meet the psychological needs of the parent rather than the developmental needs of the child.

The **martyr** is a parent who will do anything for the child, even tasks that the child should do for himself or herself. All of the good

deeds performed for the child, in the name of being a "good parent," may be used later should the parent want to gain compliance from the child. If a child goes against the parent's wishes, the parent can remind the child of all of the times the parent helped the child and evoke a feeling of guilt so that the child will do what the parent wants. The child learns to be dependent and manipulative as a result. (Beware, a parent busy whipping up cookies may really be thinking "control"!)

The **pal** is like the permissive parent described in Baumrind's model above. The pal wants to be the child's friend. Perhaps the parent is lonely, or perhaps the parent is trying to win a popularity contest against an ex-spouse. Pals let children do what they want and focus most on being entertaining and fun. They set few limitations. Consequently, the child may have little self-discipline and may try to test limits with others.

The **police officer/drill sergeant** style of parenting is similar to the authoritarian parent described above. The parent focuses primarily on making sure that the child is obedient and that the parent has full control of the child. Sometimes this can be taken to extremes by giving the child tasks that are really designed to check on their level of obedience. For example, the parent may require that the child fold the clothes and place items back in the drawer in a particular way. If not, the child might be scolded or punished for not doing things "right." This type of parent has a very difficult time allowing the child to grow and learn to make decisions independently. And the child may have a lot of resentment toward the parent that is displaced on others.

The **teacher-counselor** parent is one who pays a lot of attention to expert advice on parenting and who believes that as long as all of the steps are followed, the parent can rear a perfect child. "What's wrong with that?" you might ask. There are two major problems with this approach. First, the parent is taking all of the responsibility for the child's behavior, at least indirectly. If the child has difficulty, the parent feels responsible and thinks that the solution lies in reading more advice and trying more diligently to follow that

advice. Parents can certainly influence children, but thinking that the parent is fully responsible for the child's outcome is faulty. A parent can only do so much and can never have full control over the child. Another problem with this approach is that the child may get an unrealistic sense of the world and what can be expected from others. For example, if a teacher-counselor parent decides to help the child build self-esteem and has read that telling the child how special he or she is or how important it is to compliment the child on a job well done, the parent may convey the message that everything the child does is exceptional or extraordinary. A child may come to expect that all of his efforts warrant praise, and in the real world, this is not something one can expect. Perhaps children get more of a sense of pride from assessing their own performance than from having others praise their efforts.

So what is left? Lemasters and Defrain (1989) suggest that the **athletic coach style of parenting** is best. Before you draw conclusions here, set aside any negative experiences you may have had with coaches in the past. The principles of coaching are what are important to Lemasters and Defrain. A coach helps players form strategies, supports their efforts, gives feedback on what went right and what went wrong, and stands at the sideline while the players perform. Coaches and referees make sure that the rules of the game are followed and that all players adhere to those rules. Similarly, the athletic coach as parent helps the child understand what needs to happen in certain situations whether in friendships, school, or home life and encourages and advises the child about how to manage these situations. The parent does not intervene or do things for the child. Rather, the parent's role is to provide guidance while the child learns first hand how to handle these situations. The rules for behavior are consistent and objective and presented in that way. So, a child who is late for dinner might hear the parent respond in this way, "Dinner was at six o'clock." Rather than, "You know good and well that we always eat at six. If you expect me to get up and make something for you now, you have got another thing

coming! Just who do you think you are showing up late and looking for food? You're grounded until further notice!"

The most important thing to remember about parenting is that you can be a better, more objective parent when you are directing your actions toward the child's needs while considering what they can reasonably be expected to do at their stage of development. Parenting is more difficult when you are tired and have psychological needs that interfere with the relationship. Some of the best advice for parents is to try not to take the child's actions personally, and be as objective as possible.

Class and Culture

The impact of class and culture cannot be ignored when examining parenting styles. The two models of parenting described above assume that authoritative and athletic coaching styles are best because they are designed to help the parent raise a child who is independent, self-reliant, and responsible. These are qualities favored in "individualistic" cultures such as the United States, particularly by the middle class.

Authoritarian parenting has been used historically and reflects the cultural need for children to do as they are told. African-American, Hispanic, and Asian parents tend to be more authoritarian than non-Hispanic whites. In collectivistic cultures such as China or Korea, being obedient and compliant are favored behaviors. In societies where family members' cooperation is necessary for survival, as in the case of raising crops, rearing children who are independent and who strive to be on their own makes no sense. But in an economy based on being mobile in order to find jobs and where one's earnings are based on education, raising a child to be independent is very important.

Working-class parents are more likely than middle-class parents to focus on obedience and honesty when raising their children. In

a classic study on social class and parenting styles called *Class and Conformity*, Kohn (1977) explained that parents tend to emphasize qualities that are needed for their own survival when parenting their children. Working-class parents are rewarded for being obedient, reliable, and honest in their jobs. They are not paid to be independent or to question the management; rather, they move up and are considered good employees if they show up on time, do their work as they are told, and can be counted on by their employers. Consequently, these parents reward honesty and obedience in their children. Middle-class parents who work as professionals are rewarded for taking initiative, being self-directed, and assertive in their jobs. They are required to get the job done without being told exactly what to do. They are asked to be innovative and to work independently. These parents encourage their children to have those qualities as well by rewarding independence and self-reliance. Parenting styles can reflect many elements of culture.

Link to Learning

Video 1. In Scout O'Donnell's TED Talk, she describes the alternative parenting style used by her parents. Can you find elements of authoritative and coaching parenting, along with a little Love and Logic?



One or more interactive elements has been excluded from this version of the text. You can view them online here:

https://childpsychology.pressbooks.sunycreate.cloud/?p=99#oembed-2

Parenting and Behaviorism

Parenting generally involves many opportunities to apply principles of behaviorism, especially operant conditioning. In discussing operant conditioning, we use several everyday words—positive, negative, reinforcement, and punishment—in a specialized manner. In operant conditioning, positive and negative do not mean good and bad. Instead, *positive* means you are adding something, and *negative* means you are taking something away. *Reinforcement* means you are increasing a behavior, and *punishment* means you are decreasing a behavior. Reinforcement can be positive or negative, and punishment can also be positive or negative. All reinforcers (positive or negative) *increase* the likelihood of a behavioral response. All punishers (positive or negative) *decrease* the likelihood of a behavioral response. Now let's combine these four terms: positive reinforcement, negative reinforcement, positive punishment, and negative punishment. (See table below.)

Table 1. Positive and Negative Reinforcement and Punishment

	Reinforcement	**Punishment**
Positive	Something is *added* to *increase* the likelihood of a behavior.	Something is *added* to *decrease* the likelihood of a behavior.
Negative	Something is *removed* to *increase* the likelihood of a behavior.	Something is *removed* to *decrease* the likelihood of a behavior.

The most effective way to teach a person or animal a new behavior is with positive reinforcement. In **positive reinforcement**, a stimulus is added to the situation to increase a behavior. Parents and teachers use positive reinforcement all the time, from offering dessert after dinner, praising children for cleaning their room or completing some work, offering a toy at the end of a successful piano recital, or earning more time for recess. The goal of providing these forms of positive reinforcement is to increase the likelihood of the same behavior occurring in the future.

Positive reinforcement is an extremely effective learning tool, as evidenced by nearly 80 years worth of research. That said, there are many ways to introduce positive reinforcement into a situation. Many people believe that reinforcers must be tangible, but research shows that verbal praise and hugs are very effective reinforcers for people of all ages. Further, research suggests that constantly providing tangible reinforcers may actually be counterproductive in certain situations. For example, paying children for their grades may undermine their intrinsic motivation to go to school and do well. While children who are paid for their grades may maintain good grades, it is to receive the reinforcing pay, not because they have an intrinsic desire to do well. The impact is especially detrimental to students who initially have a high level of intrinsic motivation to do well in school. Therefore, we must provide appropriate reinforcement, and be careful to ensure that the reinforcement does not undermine intrinsic motivation.

In **negative reinforcement**, an aversive stimulus is removed to increase a behavior. For example, car manufacturers use the

principles of negative reinforcement in their seatbelt systems, which go "beep, beep, beep" until you fasten your seatbelt. The annoying sound stops when you exhibit the desired behavior, increasing the likelihood that you will buckle up in the future. Negative reinforcement is also used frequently in horse training. Riders apply pressure—by pulling the reins or squeezing their legs—and then remove the pressure when the horse performs the desired behavior, such as turning or speeding up. The pressure is the negative stimulus that the horse wants to remove.

Sometimes, adding something to the situation is reinforcing as in the cases we described above with cookies, praise, and money. Positive reinforcement involves adding something to the situation in order to encourage a behavior. Other times, taking something away from a situation can be reinforcing. For example, the loud, annoying buzzer on your alarm clock encourages you to get up so that you can turn it off and get rid of the noise. Children whine in order to get their parents to do something and often, parents give in just to stop the whining. In these instances, children have used negative reinforcement to get what they want.

Operant conditioning tends to work best if you focus on trying to encourage a behavior or move a person into the direction you want them to go rather than telling them what not to do. Reinforcers are used to encourage behavior; punishers are used to stop the behavior. A punisher is anything that follows an act and decreases the chance it will reoccur. As with reinforcement, there are also two types of punishment: positive punishment and negative punishment.

Positive punishment involves adding something in order to decrease the likelihood that a behavior will occur again in the future. Spanking is an example of positive punishment. Receiving a speeding ticket is also an example of positive punishment. Both of these punishers, the spanking and the speeding ticket, are intended to decrease the reoccurrence of the related behavior.

Negative punishment involves removing something that is desired in order to decrease the likelihood that a behavior will

occur again in the future. Putting a child in time out can serve as a negative punishment if the child enjoys social interaction. Taking away a child's technology privileges can also be a negative punishment. Taking away something that is desired encourages the child to refrain from engaging in that behavior again in order to not lose the desired object or activity.

Often, punished behavior doesn't really go away. It is just suppressed and may reoccur whenever the threat of punishment is removed. For example, a child may not cuss around you because you've washed his mouth out with soap, but he may cuss around his friends. A motorist may only slow down when the trooper is on the side of the freeway. Another problem with punishment is that when a person focuses on punishment, they may find it hard to see what the other does right or well. Punishment is stigmatizing; when punished, some people start to see themselves as bad and give up trying to change.

Reinforcement can occur in a predictable way, such as after every desired action is performed (called continuous reinforcement), or intermittently, after the behavior is performed a number of times or the first time it is performed after a certain amount of time (called partial reinforcement whether based on the number of times or the passage of time). The schedule of reinforcement has an impact on how long a behavior continues after reinforcement is discontinued. So a parent who has rewarded a child's actions each time may find that the child gives up very quickly if a reward is not immediately forthcoming. Children will learn quickest under a continuous schedule of reinforcement. Then the parent should switch to a schedule of partial reinforcement to maintain the behavior.

Try It

Try this interactive to ensure you understand the differences between punishment and reinforcement. You'll see a few introductory slides that review the concepts and then answer some questions from parenting scenarios about what constitutes punishment (positive or negative) or reinforcement (positive or negative). Check your understanding of the final slide by placing the correct terms in the paragraph.

https://lumenlearning.h5p.com/content/1290850306672497978/embed

Everyday Connection: Behavior Modification in Children

Parents and teachers often use behavior modification to change a child's behavior. Behavior modification uses the principles of operant conditioning to accomplish behavior change so that undesirable behaviors are switched for more socially acceptable ones. Some teachers and parents create a sticker chart, in which several behaviors are listed. Sticker charts are a form of token economies. Each time children perform the behavior, they get a sticker, and after a certain

number of stickers, they get a prize or reinforcer. The goal is to increase acceptable behaviors and decrease misbehavior. Remember, it is best to reinforce desired behaviors, rather than to use punishment. In the classroom, the teacher can reinforce a wide range of behaviors, from students raising their hands, to walking quietly in the hall, to turning in their homework. At home, parents might create a behavior chart that rewards children for things such as putting away toys, brushing their teeth, and helping with dinner. In order for behavior modification to be effective, the reinforcement needs to be connected with the behavior; the reinforcement must matter to the child and be provided consistently.



Figure 2. *Sticker charts are a form of positive reinforcement and a tool for behavior modification. Once this little girl earns a certain number of stickers for demonstrating a desired behavior, she will be rewarded with a trip to the ice cream parlor. (credit: Abigail Batchelder)*

Time-out is another popular technique used in behavior modification with children. It operates on the principle of negative punishment. When a child demonstrates an undesirable behavior, she is removed from the desirable activity at hand. For example, say that Sophia and her brother Mario are playing with building blocks. Sophia throws some blocks at her brother, so you give her a warning that she will go to time-out if she does it again. A few minutes later, she throws more blocks at Mario. You remove Sophia from the room for a few minutes. When she comes back, she doesn't throw blocks.

There are several important points that you should know if you plan to implement time-out as a behavior modification technique. First, make sure the child is being removed from a desirable activity and placed in a less desirable location. If the activity is something undesirable for the child, this technique will backfire because it is more enjoyable for the child to be removed from the activity. Second, the length of the time-out is important. The general rule of thumb is one minute for each year of the child's age. Sophia is five; therefore, she sits in a time-out for five minutes. Setting a timer helps children know how long they have to sit in time-out. Finally, as a caregiver, keep several guidelines in mind over the course of a time-out: remain calm when directing your child to time-out; ignore your child during a time-out (because caregiver attention may reinforce misbehavior), and give the child a hug or a kind word when time-out is over.



(a)



(b)

Figure 3. *Time-out is a popular form of negative punishment used by caregivers. When a child misbehaves, he or she is removed from a desirable activity in an effort to decrease unwanted behavior. For example, (a) a child might be playing on the playground with friends and push another child; (b) the child who misbehaved would then be removed from the activity for a short period of time. (credit a: modification of work by Simone Ramella; credit b: modification of work by "JefferyTurner"/Flickr)*

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Child Care Concerns

About 75.7 percent of mothers of school-aged and 65.1 percent of mothers of preschool-aged children in the United States work outside the home. Since more women have been entering the

workplace, there has been a concern that families do not spend as much time with their children. This, however, may not be true. Between 1981 and 1997, the amount of time that parents spent with children increased overall (Sandberg and Hofferth, 2001). Modern numbers for this vary widely, as many parents who work outside of the home also devote significant amounts of time to childcare, to 14 hours a week, compared with 10 in 1965.

Seventy-five percent of children under age 5 are in scheduled child care programs. Others are cared for by family members, friends, or are in Head Start Programs. Older children are often in after-school programs, before school programs, or stay at home alone after school once they are older. Quality childcare programs can enhance a child's social skills and can provide rich learning experiences. But long hours in poor quality care can have negative consequences for young children in particular. What determines the quality of child care? One very important consideration is the teacher/child ratio. States specify the maximum number of children that can be supervised by one teacher. In general, the younger the children, the more teachers required for a given number of children. The lower the teacher-to-child ratio, the more time the teacher has for involvement with the children and the less stressed the teacher may be so that the interactions can be more relaxed, stimulating, and positive. The more children there are in a program, the less desirable the program as well. This is because the center may be more rigid in rules and structure to accommodate a large number of children in the facility.

The physical environment should be colorful, stimulating, clean, and safe. The philosophy of the organization and the curriculum available should be child-centered, positive, and stimulating. Providers should be trained in early childhood education as well. A majority of states do not require training for their child care providers. And while formal education is not required for a person to provide a warm, loving relationship to a child, knowledge of a child's development is useful for addressing their social, emotional, and cognitive needs in an effective way. By

working toward improving the quality of childcare and increasing family-friendly workplace policies, such as more flexible scheduling and perhaps childcare facilities at places of employment, we can accommodate families with smaller children and relieve parents of the stress sometimes associated with managing work and family life.



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Divorce

A lot of attention has been given to the impact of divorce on the life of children. The assumption has been that divorce has a strong, negative impact on the child and that single-parent families are deficient in some way. Research suggests 75-80 percent of children and adults who experience divorce suffer no long-term effects (Hetherington & Kelly, 2002). Children of divorce and children who have not experienced divorce are more similar than different (Hetherington & Kelly, 2002).

Mintz (2004) suggests that the alarmist view of divorce was due in part to the newness of divorce when rates in the United States began to climb in the late 1970s. Adults reacting to the change grew up in the 1950s when rates were low. As divorce has become more common and there is less stigma associated with divorce, this view has changed somewhat. Social scientists have operated from the divorce as a deficit model emphasizing the problems of being from a "broken home" (Seccombe &Warner, 2004). More recently,

a more objective view of divorce, repartnering, and remarriage indicates that divorce, remarriage, and life in stepfamilies can have a variety of effects. The exaggeration of the negative consequences of divorce has left the majority of those who do well hidden and subjected them to unnecessary stigma and social disapproval (Hetherington & Kelly, 2002).

The tasks of families listed above are functions that can be fulfilled in a variety of family types-not just intact, two-parent households. Harmony and stability can be achieved in many family forms and when it is disrupted, either through divorce, or efforts to blend families, or any other circumstances, the child suffers (Hetherington & Kelly, 2002).

Factors Affecting the Impact of Divorce

As you look at the consequences (both pro and con) of divorce and remarriage on children, keep these family functions in mind. Some negative consequences are a result of financial hardship rather than divorce per se (Drexler, 2005). Some positive consequences reflect improvements in meeting these functions. For instance, we have learned that positive self-esteem comes in part from a belief in the self and one's abilities rather than merely being complimented by others. In single-parent homes, children may be given more opportunities to discover their own abilities and gain independence that fosters self-esteem. If divorce leads to fighting between the parents and the child is included in these arguments, the self-esteem may suffer.

The impact of divorce on children depends on a number of factors. The degree of conflict prior to the divorce plays a role. If the divorce means a reduction in tensions, the child may feel relief. If the parents have kept their conflicts hidden, the announcement of a divorce can come as a shock and be met with enormous resentment. Another factor that has a great impact on the child

concerns financial hardships they may suffer, especially if financial support is inadequate. Another difficult situation for children of divorce is the position they are put into if the parents continue to argue and fight-especially if they bring the children into those arguments.

Short-term consequences: In roughly the first year following divorce, children may exhibit some of these short-term effects:

1. **Grief over losses suffered**. The child will grieve the loss of the parent they no longer see as frequently. The child may also grieve about other family members that are no longer available. Grief sometimes comes in the form of sadness, but it can also be experienced as anger or withdrawal. Preschool-aged boys may act out aggressively while the same-aged girls may become more quiet and withdrawn. Older children may feel depressed.
2. **Reduced Standard of Living**. Very often, divorce means a change in the amount of money coming into the household. Children experience new constraints on spending or entertainment. School-aged children, especially, may notice that they can no longer have toys, clothing, or other items to which they've grown accustomed, or it may mean that there is less eating out or canceling satellite television, and so on. The custodial parent may experience stress at not being able to rely on child support payments or having the same level of income as before. This can affect decisions regarding healthcare, vacations, rents, mortgages, and other expenditures. The stress can result in less happiness and relaxation in the home. The parent who has to take on more work may also be less available to

the children.

3. **Adjusting to Transitions**. Children may also have to adjust to other changes accompanying a divorce. The divorce might mean moving to a new home and changing schools or friends. It might mean leaving a neighborhood that has meant a lot to them as well.

Long-Term consequences: The following are some effects found after the first year of a divorce:

1. **Economic/Occupational Status**. One of the most commonly cited long-term effects of divorce is that children of divorce may have lower levels of education or occupational status. This may be a consequence of lower-income and resources for funding education rather than to divorce per se. In those households where economic hardship does not occur, there may be no impact on education or occupational status (Drexler, 2005).
2. **Improved Relationships with the Custodial Parent** (usually the mother): The majority of custodial parents are mothers (approximately 80.4 percent) and
19.6 percent of custodial parents are fathers. Shared custody is on the rise, however, and shows promising social, academic, and psychological results for the children. Children from single-parent families talk to their mothers more often than children of two-parent families (McLanahan and Sandefur, 1994). Most children of divorce lead happy, well-adjusted lives and develop stronger, positive relationships with their custodial parent (Seccombe and Warner, 2004). In a

study of college-age respondents, Arditti (1999) found that increasing closeness and a movement toward more democratic parenting styles were experienced. Others have also found that relationships between mothers and children become closer and stronger (Guttman, 1993) and suggest that greater equality and less rigid parenting is beneficial after divorce (Steward, Copeland, Chester, Malley, and Barenbaum, 1997).

3. **Greater emotional independence in sons**. Drexler (2005) notes that sons who are raised by mothers only develop an emotional sensitivity to others that is beneficial in relationships.
4. **Feeling more anxious in their own love relationships.** Children of divorce may feel more anxious about their own relationships as adults. This may reflect a fear of divorce if things go wrong, or it may be a result of setting higher expectations for their own relationships.
5. **Adjustment of the custodial parent**. Furstenberg and Cherlin (1991) believe that the primary factor influencing the way that children adjust to divorce is the way the custodial parent adjusts to the divorce. If that parent is adjusting well, the children will benefit. This may explain a good deal of the variation we find in children of divorce. Adults going through a divorce should consider good self-care as beneficial to the children-not as self-indulgent.

6. **Mental health issues**: Some studies suggest that anxiety and depression that are common in children and adults within the first year of divorce may actually not resolve. A 15-year study by Bohman, Låftman, Päären, Jonsson (2017) suggests that parental separation significantly increases the risk for depression 15 years later when depression rates were compared to matched controls. In fact, the risk of depression was related more strongly to parental conflict and parental separation than it was to parental depression.



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Changing Family Structure

According to the 2010 census data, only 66 percent of children under seventeen years old live in a household with two married parents. This is a decrease from 77 percent in 1980 (U.S. Census, 2011). This two-parent family structure is known as a **nuclear family,** referring to married parents and children as the nucleus, or core, of the group. Recent years have seen a rise in variations of the nuclear family with the parents not being married. Three percent of children live with two cohabiting parents (U.S. Census, 2011).

Some two-parent households consist of same-sex parents. Over 30% of same-sex couples are raising children, not far from the 43 percent of opposite-sex couples (U.S. Census, 2009). Of the children

in same-sex couple households, 73 percent are biological children (of only one of the parents), 21 percent are adopted only, and 6 percent are a combination of biological and adopted (U.S. Census, 2009). While there have been some questions regarding the well-being of children who grow up in same-sex households, research reports that same-sex parents are as effective as opposite-sex parents. In an analysis of 81 parenting studies, sociologists found no quantifiable data to support the notion that opposite-sex parenting is any better than same-sex parenting. Children of lesbian couples, however, were shown to have slightly lower rates of behavioral problems and higher rates of self-esteem (Biblarz & Stacey 2010).

Single-parent households are on the rise. In 2010, 27 percent of children lived with a single parent only, up from 25 percent in 2008. Of that 27 percent, 23 percent live with their mother, and three percent live with their father. Ten percent of children living with their single mother and 20 percent of children living with their single father also live with the cohabitating partner of their parent (for example, boyfriends or girlfriends).

Stepparents are an additional family element in two-parent homes. Among children living in two-parent households, 9 percent live with a biological or adoptive parent and a stepparent. The majority (70 percent) of those children live with their biological mother and stepfather. Family structure has been shown to vary with the age of the child. Older children (fifteen to seventeen years old) are less likely to live with two parents than adolescent children (six to fourteen years old) or young children (zero to five years old). Older children who do live with two parents are also more likely to live with stepparents (U.S. Census, 2011).

In some family structures, a parent is not present at all. In 2010, three million children (4 percent of all children) lived with a guardian who was neither their biological nor adoptive parent. Of these children, 54 percent live with grandparents, 21 percent live with other relatives, and 24 percent live with nonrelatives. This family structure is referred to as the **extended family** and may include aunts, uncles, and cousins living in the same home. Foster parents

account for about a quarter of nonrelatives. The practice of grandparents acting as parents, whether alone or in combination with the child's parent, is becoming widespread among today's families (De Toledo and Brown 1995). Nine percent of all children live with a grandparent, and in nearly half those cases, the grandparent maintains primary responsibility for the child (U.S. Census, 2011). A grandparent functioning as the primary care provider often results from parental drug abuse, incarceration, or abandonment. Events like these can render the parent incapable of caring for his or her child.

Changes in the traditional family structure raise questions about how such societal shifts affect children. U.S. Census statistics have long shown that children living in homes with both parents grow up with more financial and educational advantages than children who are raised in single-parent homes (U.S. Census, 1997). Parental marital status seems to be a significant indicator of advancement in a child's life. Children living with a divorced parent typically have more advantages than children living with a parent who never married; this is particularly true of children who live with divorced fathers. This finding correlates with the statistic that never-married parents are typically younger, have fewer years of schooling, and have lower incomes (U.S. Census, 1997). Six in ten children living with only their mother live near or below the poverty level. Of those being raised by single mothers, 69 percent live in or near poverty compared to 45 percent for divorced mothers (U.S. Census 1997). Though other factors such as age and education play a role in these differences, it can be inferred that marriage between parents is generally beneficial for children.

Sibling Relationships

Siblings spend a considerable amount of time with each other and offer a unique relationship that is not found with same-age peers

or with adults. Siblings play an important role in the development of social skills. Cooperative and pretend play interactions between younger and older siblings can teach empathy, sharing, and cooperation (Pike, Coldwell, & Dunn, 2005), as well as negotiation and conflict resolution (Abuhatoum & Howe, 2013). However, the quality of sibling relationships is often mediated by the quality of the parent-child relationship and the psychological adjustment of the child (Pike et al., 2005). For instance, more negative interactions between siblings have been reported in families where parents had poor patterns of communication with their children (Brody, Stoneman, & McCoy, 1994). Children who have emotional and behavioral problems are also more likely to have negative interactions with their siblings. However, the psychological adjustment of the child can sometimes be a reflection of the parent-child relationship. Thus, when examining the quality of sibling interactions, it is often difficult to tease out the separate effect of adjustment from the effect of the parent-child relationship.

While parents want positive interactions between their children, conflicts are going to arise, and some confrontations can be the impetus for growth in children's social and cognitive skills. The sources of conflict between siblings often depend on their respective ages. Dunn and Munn (1987) revealed that over half of all sibling conflicts in early childhood were disputes about property rights. By middle childhood, this starts shifting toward control over social situations, such as what games to play, disagreements about facts or opinions, or rude behavior (Howe, Rinaldi, Jennings, & Petrakos, 2002). Researchers have also found that the strategies children use to deal with conflict change with age, but that this is also tempered by the nature of the conflict. Abuhatoum and Howe (2013) found that coercive strategies (e.g., threats) were preferred when the dispute centered on property rights, while reasoning was more likely to be used by older siblings and in disputes regarding control over the social situation. However, younger siblings also use reasoning, frequently bringing up the concern of legitimacy (e.g., "You're not the boss") when in conflict with an older sibling.

This strategy is commonly used by younger siblings and is possibly an adaptive strategy in order for younger siblings to assert their autonomy (Abuhatoum & Howe, 2013). A number of researchers have found that children who can use non-coercive strategies are more likely to have a successful resolution, whereby a compromise is reached, and neither child feels slighted (Ram & Ross, 2008; Abuhatoum & Howe, 2013).

Not surprisingly, friendly relationships with siblings often lead to more positive interactions with peers. The reverse is also true. A child can also learn to get along with a sibling, with, as the song says, "a little help from my friends" (Kramer & Gottman, 1992).

In late adolescence, as teens become more independent, research has shown a decline in the frequency of interactions between siblings, as presumably peers and romantic relationships become more central to the lives of young people. Aquilino (2006) suggests that during this transition, the task may be to maintain enough of a sibling bond so that there will be a foundation for this relationship in later life. Those who are successful can often move away from the "older-younger" sibling conflicts of childhood, toward an equal relationship between two adults. Siblings that were close to each other in childhood are typically close in adulthood (Dunn, 1984, 2007), and in fact, it is unusual for siblings to develop closeness for the first time in adulthood. Overall, the majority of adult sibling relationships are close (Cicirelli, 2009).

Parent-Child Conflict

Despite popular belief, it appears that most teens do not experience adolescent "storm and stress" to the degree once famously suggested by G. Stanley Hall, a pioneer in the study of adolescent development. Only small numbers of teens have major conflicts with their parents (Steinberg & Morris, 2001), and most disagreements are minor. For example, in a study of over 1,800 parents of

adolescents from various cultural and ethnic groups, Barber (1994) found that conflicts occurred over day-to-day issues such as homework, money, curfews, clothing, chores, and friends. These disputes occur because an adolescent's drive for independence and autonomy conflicts with the parent's supervision and control. These types of arguments tend to decrease as teens develop (Galambos & Almeida, 1992).

As adolescents work to form their identities, they pull away from their parents, and the peer group becomes very important (Shanahan, McHale, Osgood, & Crouter, 2007). Despite spending less time with their parents, most teens report positive feelings toward them (Moore, Guzman, Hair, Lippman, & Garrett, 2004). Warm and healthy parent-child relationships have been associated with positive child outcomes, such as better grades and fewer school behavior problems, in the United States as well as in other countries (Hair et al., 2005).

Although peers take on greater importance during adolescence, family relationships remain important too. One of the key changes during adolescence involves a renegotiation of parent-child relationships. As adolescents strive for more independence and autonomy during this time, different aspects of parenting become more salient. For example, parents' distal supervision and monitoring become more important as adolescents spend more time away from parents and in the presence of peers. Parental monitoring encompasses a wide range of behaviors such as parents' attempts to set rules and know their adolescents' friends, activities, and whereabouts, in addition to adolescents' willingness to disclose information to their parents. (Stattin & Kerr, 2000). Psychological control, which involves manipulation and intrusion into adolescents' emotional and cognitive world through invalidating adolescents' feelings and pressuring them to think in particular ways is another aspect of parenting that becomes more salient during adolescence and is related to more problematic adolescent adjustment.



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Child Maltreatment



The Child Abuse Prevention and Treatment Act (United States Department of Health and Human Services, 2013) defines **child maltreatment** as any recent act or failure to act on the part of a parent or caretaker which results in death, serious physical or emotional harm, sexual abuse or exploitation; or an act or failure to act, which presents an imminent risk of serious harm (p. viii). **Child abuse** occurs when a parent or caretaker inflicts, or allows someone to inflict, serious physical injury other than by accidental means. **Child neglect** is the failure of a parent or caretaker to provide for a child's needs to the degree that the child's health, safety, and well-being are threatened with harm. Each state has its own definition of child abuse based on federal law, and most states recognize four major types of maltreatment: neglect, physical abuse, sexual abuse, and psychological maltreatment. Each of the forms of child maltreatment may be identified alone, but they can occur in combination.

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Video 1. *What are Child Abuse and Neglect* discusses the different types of abuse and interventions to prevent maltreatment.

Child Protective Services (CPS) agencies received an estimated 3.5 million referrals involving approximately 6.4 million children, and 2.1 million referrals (60%) were investigated. This is a rate of 28.3 per 1,000 children in the national population. Three-fifths of child abuse reports are made by professionals, including teachers, law enforcement personnel, and social services staff. The rest are made by anonymous sources, other relatives, parents, friends, and neighbors.

Child maltreatment may come in several forms, the most common being neglect (78.3%), followed by physical abuse (10.%), sexual abuse (7.6%), psychological maltreatment (7.6%), and medical neglect (2.4%) (Child Help, 2011). Some children suffer from a combination of these forms of abuse. The majority (81.2%) of perpetrators are parents; 6.2 percent are other relatives.

Nationally, an estimated 1,520 children die from abuse and neglect, and nearly three-quarters (73.9%) of all child fatalities were younger than three years old. Boys had a higher child fatality rate (2.36 per 100,000 boys) than girls (1.77 per 100,000 girls). More than 85 percent (86.8%) of child fatalities were comprised of White (39.3%), African-American (33.0%), and Hispanic (14.5%) victims, and 78.9% of child fatalities were caused by one or both parents (United States Department of Health and Human Services, 2013).

As most reports of abuse and neglect come from professionals working with children, they need to be aware of the potential signs of abuse and neglect. The following signs exhibited by children and their parents may signal the presence of child abuse or neglect.

The Child:

- Shows sudden changes in behavior or school performance
- Has not received help for physical or medical problems brought to the parents' attention
- Has learning problems (or difficulty concentrating) that cannot be attributed to specific physical or psychological causes

- Is always watchful, as though preparing for something bad to happen
- Lacks adult supervision What Is Child Abuse and Neglect?
- Is overly compliant, passive, or withdrawn
- Comes to school or other activities early, stays late, and does not want to go home
- Is reluctant to be around a particular person
- Discloses maltreatment

The Parent:

- Denies the existence of—or blames the child for—the child's problems in school or at home
- Asks teachers or other caregivers to use harsh physical discipline if the child misbehaves
- Sees the child as entirely bad, worthless, or burdensome
- Demands a level of physical or academic performance the child cannot achieve
- Looks primarily to the child for care, attention, and satisfaction of the parent's emotional needs
- Shows little concern for the child The Parent and Child:
- Rarely touch or look at each other
- Consider their relationship entirely negative
- States that they do not like each other

The above list may not be *all* the signs of abuse or neglect. It is essential to pay attention to other behaviors that may seem unusual or concerning. In addition to these signs and symptoms, Child Welfare Information Gateway provides information on the risk factors and perpetrators of child abuse and neglect fatalities

Neglect

Neglect is the failure of a parent, guardian, or other caregivers to provide for a child's basic needs. There are many forms of neglect: physical, medical, educational, emotional, and abandonment.

Physical is a failure to provide for the child's physical needs.

Parents must provide their children with food and water. They also need safe, appropriate shelter. Shelter may be more than just a roof of their head. Is the home structurally safe? Is there a means for keeping the house a safe temperature? Is there water for hygiene? Are there any health and safety issues with the home? Parents are also required to provide appropriate supervision for the child to keep them safe. Appropriate may be challenging to define. Many states do not provide strict rules as to when children may be unsupervised or for how long, or when children can be responsible for caring for younger siblings. That is due to variations in maturity. Some 10-year-olds can be trusted to stay home alone for short periods, and some 15-year-olds cannot be left unsupervised for any amount of time.

Medical neglect is the failure to provide necessary medical or mental health treatment that a child needs. If a child is injured or sick and requires medical intervention, it is the parents' responsibility to be sure that the child gets help. The same is true if the child were having a mental health crisis or needed psychological intervention for their health and safety. Finally, dental issues that cause the child pain or infection would also be a medical requirement. Medical neglect can be another challenge to define. For example, would never take a child to a doctor for a physical be neglect? What about the failure to get the child vaccinated? In many states, failure to provide preventative medical care would not be considered neglect.

Educational neglect is a failure to educate a child. All children have the right to free public education, but it is the parents' responsibility to make sure that the child gets to school—at least for the time in which school is compulsory. In most states, kindergarten is not mandatory. Similarly, after a certain age, teens are no longer required to attend school. Educational neglect would not apply in these situations. If a parent chooses not to send their child to a public school, it is then their responsibility to ensure that the child receives an appropriate education. This education could be through a private school or homeschooling. Each state has its own

regulations around what is considered acceptable for private or homeschooling education. Some states have strict rules that require regular submission of lessons, updates regarding student progress, and mandates for all children to take standardized exams. Other states require no more than a letter from the parent stating that the child will be homeschooled, no follow-up on the child's learning. Educational neglect may also be a failure for the parent to attend to special education needs, even if the child is in public school. Parents that do not comply with requests to get their child tested, meet for planning meetings, or sign off on educational plans may impede their child from receiving the special education services that they require.

Emotional neglect is the failure to meet a child's emotional needs. This behavior could range from being inattentive or emotionally unavailable to the child to being outright rejecting. Children need affection, love, support, and social interaction. For younger children, this primarily comes from their caregivers, but even older children need to feel the love from their parents.

Abandonment includes situations where the parent's identity or whereabouts are unknown, the child has been left alone in circumstances where the child suffers serious harm, or the parent has failed to maintain contact with the child or provide reasonable support for a specified period. If a parent cannot be present to care for their child, it is their responsibility to arrange for safe, appropriate care.

Consider the possibility of neglect when the child:

- Is frequently absent from school
- Begs or steals food or money Lacks needed medical or dental care, immunizations, or glasses
- Is consistently dirty and has severe body odor
- Lacks sufficient clothing for the weather
- Abuses alcohol or other drugs
- States that there is no one at home to provide care

Consider the possibility of neglect when the parent or other adult caregiver:

- Appears to be indifferent to the child
- Seems apathetic or depressed
- Behaves irrationally or in a bizarre manner
- Is abusing alcohol or other drugs

Many parents do not purposely neglect their children; factors such as cultural values, the standard of care in a community, and poverty can lead to a hazardous level of neglect. If information or assistance from public or private services are available, and a parent fails to use those services, child welfare services may intervene (U.S. Department of Health and Human Services).

Physical Abuse

Physical Abuse is nonaccidental physical injury (ranging from minor bruises to severe fractures or death) as a result of punching, beating, kicking, biting, shaking, throwing, stabbing, choking, hitting (with a hand, stick, strap, or other objects), burning, or otherwise harming a child, that is inflicted by a parent, caregiver, or other people who have responsibility for the child. Such injury is considered abuse regardless of whether the caregiver intended to hurt the child. Physical abuse in children may come in the form of beating, kicking, throwing, choking, hitting with objects, burning, or other methods. Physical discipline, such as spanking or paddling, is not considered abuse as long as it is reasonable and causes no bodily injury to the child (Child Welfare Information Gateway, 2008).

This issue is somewhat controversial among modern-day people in the United States. While some parents feel that physical discipline, or corporal punishment, is an effective way to respond to bad behavior, others feel that it is a form of abuse. According to

a poll conducted by ABC News, 65 percent of respondents approve of spanking, and 50 percent said that they sometimes spank their child.

Consider the possibility of physical abuse when the child:

- Has unexplained burns, bites, bruises, broken bones, or black eyes
- Has fading bruises or other marks noticeable after an absence from school
- Seems frightened of the parents and protests or cries when it is time to go home
- Shrinks at the approach of adults
- Reports injury by a parent or another adult caregiver
- Abuses animals or pets

Consider the possibility of physical abuse when the parent or other adult caregiver:

- Offers conflicting, unconvincing, or no explanation for the child's injury, or provides an explanation that is not consistent with the injury
- Describes the child as "evil" or in some other very negative way
- Uses harsh physical discipline with the child
- Has a history of abuse as a child
- Has a history of abusing animals or pets

The tendency toward physical punishment may be affected by culture and education. Those who live in the South are more likely than those who live in other regions of the United States to spank their child. Those who do not have a college education are also more likely to spank their child (Crandall, 2011). Studies have shown that spanking is not an effective form of punishment and may lead to aggression by the victim, particularly in those who are spanked at a young age (Berlin 2009).

Sexual Abuse

Sexual abuse includes activities by a parent or caregiver such as fondling a child's genitals, penetration, incest, rape, sodomy, indecent exposure, and exploitation through prostitution or the production of pornographic materials. Sexual abuse is defined as "the employment, use, persuasion, inducement, enticement, or coercion of any child to engage in, or assist any other person to engage in, any sexually explicit conduct or simulation of such conduct for the purpose of producing a visual depiction of such conduct; or the rape, and in cases of caretaker or inter-familial relationships, statutory rape, molestation, prostitution, or other forms of sexual exploitation of children, or incest with children" (Child Welfare Information Gateway, 2008).

Researchers estimate that 1 out of 4 girls and 1 out of 10 boys have been sexually abused (Valente, 2005). The median age for sexual abuse is 8 or 9 years for both boys and girls (Finkelhor et al. 1990). Most boys and girls are sexually abused by a male. Childhood sexual abuse is defined as any sexual contact between a child and an adult or a much older child. Incest refers to sexual contact between a child and family members. In each of these cases, the child is exploited by an older person without regard for the child's developmental immaturity and inability to understand the sexual behavior (Steele, 1986).

Although rates of sexual abuse are higher for girls than for boys, boys may be less likely to report abuse because of the cultural expectation that boys should be able to take care of themselves and because of the stigma attached to homosexual encounters (Finkelhor et al. 1990). Girls are more likely to be victims of incest, and boys are more likely to be abused by someone outside the family. Sexual abuse can create feelings of self-blame, betrayal, and feelings of shame and guilt (Valente, 2005). Sexual abuse is particularly damaging when the perpetrator is someone the child trusts. Victims of sexual abuse may suffer from depression, anxiety,

problems with intimacy, and suicide (Valente, 2005). Sexual abuse has additional impacts, as well. Studies suggest that children who have been sexually abused have an increased risk of eating disorders and sleep disturbances. Further, sexual abuse can lead to Post Traumatic Stress Disorder.

Consider the possibility of sexual abuse when the child:

- Has difficulty walking or sitting
- Suddenly refuses to change for gym or to participate in physical activities
- Reports nightmares or bedwetting
- Experiences a sudden change in appetite
- Demonstrates bizarre, sophisticated, or unusual sexual knowledge or behavior
- Becomes pregnant or contracts a venereal disease, particularly if under age 14
- Runs away • Reports sexual abuse by a parent or another adult caregiver
- Attaches very quickly to strangers or new adults in their environment

Consider the possibility of sexual abuse when the parent or other adult caregiver:

- Is unduly protective of the child or severely limits the child's contact with other children, especially of the opposite sex
- Is secretive and isolated
- Is jealous or controlling with family members

Being sexually abused as a child can have a powerful impact on self-concept. The concept of **false self-training** (Davis, 1999) refers to holding a child to adult standards while denying the child's developmental needs. Sexual abuse is just one example of false self-training. These abused children are held to adult standards of desirableness and sexuality while their level of cognitive,

psychological, and emotional immaturity are ignored. Consider how confusing it might be for a 9-year-old girl who has physically matured early to be thought of as a potential sex partner. Her cognitive, psychological, and emotional state does not equip her to make decisions about sexuality or, perhaps, to know that she can say no to sexual advances. She may feel like a 9-year-old in all ways and be embarrassed and ashamed of her physical development. Girls who mature early have problems with low self-esteem because of the failure of others (family members, teachers, ministers, peers, advertisers, and others) to recognize and respect their developmental needs. Overall, youth are more likely to be victimized because they do not have control over their contact with offenders (parents, babysitters, etc.) and have no means of escape (Finkelhor and Dzuiba-Leatherman, in Davis, 1999).

Psychological Maltreatment

Psychological maltreatment is a pattern of behavior that impairs a child's emotional development or sense of self-worth. This behavior may include constant criticism, threats, or rejection, as well as withholding love, support, or guidance. Emotional abuse is often difficult to prove, and therefore, child protective services may not be able to intervene without evidence of harm or mental injury to the child. Emotional abuse is almost always present when other types of maltreatment are identified.

Consider the possibility of emotional maltreatment when the child:

- Shows extremes in behavior, such as overly compliant or demanding behavior, extreme passivity, or aggression
- Is either inappropriately adult (parenting other children, for example) or inappropriately infantile (frequently rocking or head-banging, for example)

- Is delayed in physical or emotional development
- Has attempted suicide
- Reports a lack of attachment to the parent

Consider the possibility of emotional maltreatment when the parent or other adult caregiver:

- Constantly blames, belittles, or berates the child
- Is unconcerned about the child and refuses to consider offers of help for the child's problems
- Overtly rejects the child

Risk Factors for Maltreatment

Child abuse occurs at all socioeconomic and education levels and crosses ethnic and cultural lines. Just as child abuse is often associated with stresses felt by parents, including financial stress, parents who demonstrate resilience to these stresses are less likely to abuse (Samuels 2011). Young parents are typically less capable of coping with stresses, particularly the stress of becoming a new parent. Teenage mothers are more likely to abuse their children than their older counterparts. As a parent's age increases, the risk of abuse decreases. Children born to mothers who are fifteen years old or younger are twice as likely to be abused or neglected by age five than are children born to mothers ages twenty to twenty-one (George and Lee 1997).

Drug and alcohol use is also a known contributor to child abuse. Children raised by substance abusers have a risk of physical abuse three times greater than other kids, and neglect is four times as prevalent in these families (Child Welfare Information Gateway 2011). Other risk factors include social isolation, depression, low parental education, and a history of being mistreated as a child.

Approximately 30 percent of abused children will later abuse their own children (Child Welfare Information Gateway 2006).

Outcomes Associated with Maltreatment

Child abuse and neglect can have lifelong implications for victims, including the impact the physical, mental, and emotional wellbeing. While the physical wounds heal, there are several long-term consequences of experiencing the trauma of abuse or neglect. Children who are maltreated are at risk of experiencing cognitive delays and emotional difficulties, among other issues. Childhood trauma also negatively affects nervous system and immune system development, putting children who have been maltreated at a higher risk for health problems as adults

Injury, poor health, and mental instability occur at a high rate in this group, with 80 percent meeting the criteria of one or more psychiatric disorders, such as depression, anxiety, or suicidal behavior, by age twenty-one. Abused children may also suffer from cognitive and social difficulties. Behavioral consequences will affect most, but not all, of child abuse victims. Children of abuse are 25 percent more likely, as adolescents, to suffer from difficulties like poor academic performance and teen pregnancy, or to engage in behaviors like drug abuse and general delinquency. They are also more likely to participate in risky sexual acts that increase their chances of contracting a sexually transmitted disease (Child Welfare Information Gateway 2006). Other risky behaviors include drug and alcohol abuse. As these consequences can affect healthcare, education, and criminal systems, the problems resulting from child abuse do not just belong to the child and family, but to society as a whole.



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Stress and Development

What is the impact of stress on development? The answer to that question is complex and depends on several factors, including the number of stressors, the duration of stress, and the individual's ability to cope with stress.

Children experience different types of stressors that could be manifest in various ways. Everyday stress can provide an opportunity for individuals to build coping skills and poses little risk to development. Even long-lasting stressful events, such as changing schools or losing a loved one, can be managed reasonably well.

Some experts have theorized that there is a point where prolonged or excessive stress becomes harmful and can lead to serious health effects. When stress builds up in childhood, neurobiological factors are affected; in turn, levels of the stress hormone cortisol exceed normal ranges. Due in part to the biological consequences of excessive cortisol, children can develop physical, emotional, and social symptoms. Physical conditions include cardiovascular problems, skin conditions, susceptibility to viruses, headaches, or stomach aches in young children. Emotionally, children may become anxious or depressed, violent, or feel overwhelmed. Socially, they may become withdrawn and act out towards others, or develop new behavioral ticks such as biting nails or picking at skin.

Types of Stress



Researchers have proposed three distinct types of responses to stress in young children: positive, tolerable, and toxic. Positive stress (also called eustress) is necessary and promotes resilience, or the ability to function competently under threat. Such stress arises from brief, mild to moderate stressful experiences, buffered by the presence of a caring adult who can help the child cope with the stressor. This type of stress causes minor, temporary physiological and hormonal changes in the young child, such as an increase in heart rate and a change in hormone cortisol levels. The first day of school, a family wedding, or making new friends are all examples of positive stressors. Tolerable stress comes from adverse experiences that are more intense but short-lived and can usually be overcome. Some examples of tolerable stressors are family disruptions, accidents, or the death of a loved one. The body's stress response is more intensely activated due to severe stressors; however, the response is still adaptive and temporary.

Toxic stress is a term coined by pediatrician Jack P. Shonkoff of the Center on the Developing Child at Harvard University to refer to chronic, excessive stress that exceeds a child's ability to cope, especially in the absence of supportive caregiving from adults. Extreme, long-lasting stress in the absence of supportive relationships to buffer the effects of a heightened stress response can produce damage and weakening of bodily and brain systems, which can lead to diminished physical and mental health

throughout a person's lifetime. Exposure to such toxic stress can result in the stress response system becoming more highly sensitized to stressful events, producing increased wear and tear on physical systems through over-activation of the body's stress response. This wear and tear increases the later risk of various physical and mental illnesses.



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Video 1. *Toxic Stress DerailsHealthy Development* explains some of the biological changes that accompany toxic stress.



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Adverse Childhood Experiences

The toxic stress that children endure can have a significant impact on their later lives. According to Merrick, Ford, Ports, and Guinn (2018), the foundation for lifelong health and well-being is created in childhood, as positive experiences strengthen biological systems

while adverse experiences can increase mortality and morbidity **Adverse Childhood Experiences**, or ACEs, are potentially traumatic events that occur in childhood (0-17 years) such as experiencing violence, abuse, or neglect; witnessing violence in the home; and having a family member attempt or die by suicide. Also included are aspects of the child's environment that can undermine their sense of safety, stability, and bonding such as growing up in a household with substance misuse, mental health problems, or instability due to parental separation or incarceration of a parent, sibling, or another member of the household. Traumatic events in childhood can be emotionally painful or distressing and can have effects that persist for years.2 Factors such as the nature, frequency, and seriousness of the traumatic event, prior history of trauma, and available family and community supports can shape a child's response to trauma.

Some groups have been found to be at a greater risk for experiencing ACEs. Merrick et al. (2018) reviewed the results from the 2011-2014 Behavioral Risk Factor Surveillance System, which included an ACE module consisting of questions adapted from the Centers for Disease Control and Prevention. Each question was collapsed into one of the eight ACE categories: physical abuse, emotional abuse, sexual abuse, household mental illness, household substance use, household domestic violence, incarcerated household member, and parental separation or divorce. The results indicated that 25% of the sample had been exposed to three or more ACEs, and although ACEs were found across all demographic groups, those who identified as Black, multiracial, lesbian/gay/bisexual, having less than a high school education, being low income, and unemployed experienced significantly higher ACE exposure. Assisting families and providing children with supportive and responsive adults can help prevent the negative effects of ACEs.

Consequences of ACEs and Toxic Stress

An estimated 62% of adults surveyed across 23 states reported that they had experienced one ACE during childhood and nearly one-quarter reported that they had experienced three or more ACEs. ACEs can have negative, lasting effects on health, wellbeing, and opportunity. These exposures can disrupt healthy brain development, affect social development, compromise immune systems, and can lead to substance misuse and other unhealthy coping behaviors. The evidence confirms that these exposures increase the risks of injury, sexually transmitted infections, including HIV, mental health problems, maternal and child health problems, teen pregnancy, involvement in sex trafficking, a wide range of chronic diseases and the leading causes of death such as cancer, diabetes, heart disease, and suicide. ACEs can also negatively impact education, employment, and earnings potential. The total economic and social costs to families, communities, and society is in the hundreds of billions of dollars each year.

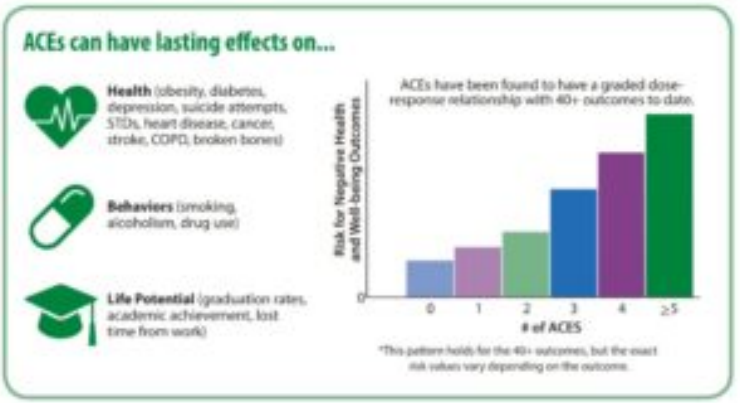


Figure 1. Risk of outcomes due to adverse childhood experiences. Children who experience toxic stress or who live in extremely

stressful situations of abuse over long periods can suffer long-lasting effects. The structures in the midbrain or limbic systems, such as the hippocampus and amygdala, can be vulnerable to prolonged stress (Middlebrooks and Audage, 2008). High levels of the stress hormone cortisol can reduce the size of the hippocampus and affect a child's memory abilities. Stress hormones can also reduce immunity to disease. If the brain is exposed to long periods of severe stress, it can develop a low threshold, making a child hypersensitive to stress in the future.

With chronic toxic stress, children undergo long-term hyper-arousal of brain stem activity. This activity includes an increase in heart rate, blood pressure, and arousal states. These children may experience a change in brain chemistry, which leads to hyperactivity and anxiety. Therefore, it is evident that chronic stress in a young child's life can create significant physical, emotional, psychological, social, and behavioral changes; however, the effects of stress can be minimized if the child has the support of caring adults.



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Video 2. *How Childhood Trauma Affects Health Across a Lifetime* discusses the development of an ACE assessment and the research results on outcomes.

separating Families At the U.S. Border

Thousands of children were separated from their parents beginning in April 2018 as they approached the United States border by Immigration and Customs Enforcement (ICE). Children were placed in separate facilities from their parents when they were being processed, and they were not told when they would be reunited. When enduring stressful situations, separation from one's parents can be extremely detrimental to a child (Society for Research in Child Development (SRCD), 2018). Parental separations affect children's stress management systems by changing how the body responds to stress. Long-term stress can disrupt brain functioning, cognitive skills, emotional processing, and physiological health. When exposed to stress, children typically look to their parents for support and care, and parents can reduce children's stress. These separated children were already under extreme stress escaping their previous homes and then were separated from the individuals who could support them through this process. Stress from parent separation places children at a higher risk for anxiety, depression, PTSD, lower IQ, obesity, impaired immune system functioning, and medical conditions (SRCD, 2018). Even after being reunited, children can experience attachment issues, poorer self-esteem, and physical and psychological health difficulties. As they age, they continue to exhibit an increased risk for mental health problems, problems in social interactions, difficulty with adult attachments, poorer stress management, and an increased risk for death. The American Psychological

Association (2019) opposes policies that separate families given the negative outcomes suffered by children.

Preventing ACEs

The Centers for Disease Control and Prevention (2019) suggests several strategies that can prevent ACEs from happening in the first place as well as strategies to mitigate the harms of ACEs. The evidence tells us that ACEs can be prevented by strengthening economic supports for families, promoting social norms that protect against violence and adversity, ensuring a strong start for children and paving the way for them to reach their full potential, teaching skills to help parents and youth handle stress, manage emotions, and tackle everyday challenges. connecting youth to caring adults and activities, and intervening to lessen immediate and long-term harm.

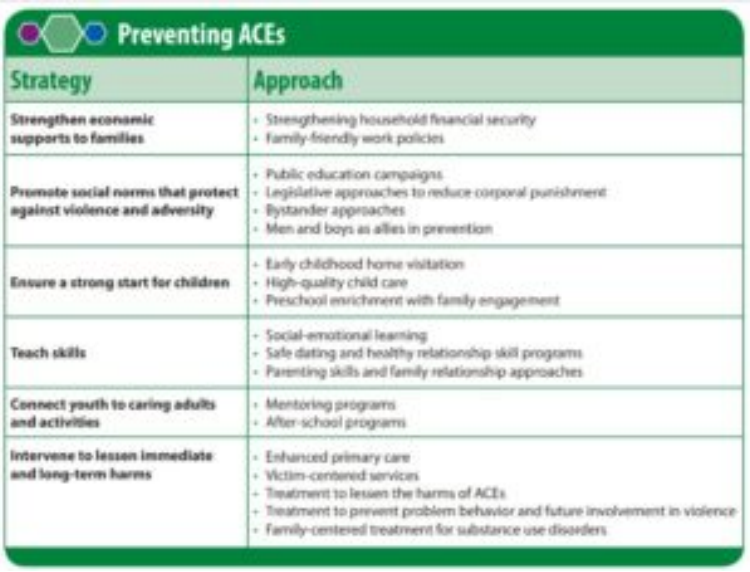


Figure 2. Strategies for preventing adverse childhood experiences.

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Video 3. Preventing ACEs discusses how communities can reduce the risk for adverse childhood experiences.

Coping with Stress

Stress is encountered in four different stages. In the first stage, stress usually causes alarm. Next, in the second or appraisal stage, the person attempts to find meaning from the event. Stage three consists of the individual seeking out coping strategies. Lastly, in stage four, people execute one or more of the coping strategies. However, individuals with a lower tolerance for stressors are more susceptible to alarm and find a broader array of events to be stressful. These children often experience chronic or toxic stress.



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Video 4. *The Science of Resilience* describes a variety of factors involved in the development of resilience.

Some recommendations to help children manage stressful situations include:

- Preparing children for everyday stressful situations, such as traveling to new places or going to the doctor. For example, talk to children about the experience to help them understand that it is okay to be stressed and scared.
- Keeping communication open. This includes making sure that the child feels comfortable talking to a person. This may include being in a comfortable space, such as their bedroom, where they feel safe. The comfort level of the child is important because if a child is not comfortable, or feels forced to speak, they may not open up at all.

- Spending time together as a family so that no one's feelings go unseen, ensuring that a child knows that their feelings are valued, and should be expressed in healthy ways.
- Modeling healthy and successful coping mechanisms (such as going for a walk).
- Encouraging children to express themselves creatively (as an outlet or to help others to understand what is stressing the child). Some healthy outlets of stress relief include sports or running, writing, reading, art, as well as playing musical instruments.
- Teaching children to act and think positively when they are faced with a situation to manage the stress before it becomes overwhelming.
- Providing a safe and healthy home and environment for children.
- Providing children with proper nutrition and attention.
- Ensuring children are not exposed to substance abuse or violence. When a healthy environment is provided, children are more likely to be emotionally and physically healthy

Watch It

Video 5. *Trauma-Informed Practices to Support Learning* explains how one school placed a strong focus on relationships, social and emotional learning, and understanding students' mental health informs how Fall-Hamilton's staff interacts with students.





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Peer Relationships

Relationships within the family (parent-child and siblings) are not the only significant relationships in a child's life. Peer relationships are also important. Social interaction with another child who is similar in age, skills, and knowledge provokes the development of many social skills that are valuable for the rest of life (Bukowski, Buhrmester, & Underwood, 2011). In peer relationships, children learn how to initiate and maintain social interactions with other children. They learn skills for managing conflict, such as turn-taking, compromise, and bargaining. Play also involves the mutual, sometimes complex, coordination of goals, actions, and understanding. For example, as preschoolers engage in pretend play they create narratives together, choose roles, and collaborate to act out their stories. Through these experiences, children develop friendships that provide additional sources of security and support to those provided by their parents.

However, peer relationships can be challenging as well as supportive (Rubin, Coplan, Chen, Bowker, & McDonald, 2011). Being accepted by other children is an essential source of affirmation and self-esteem. At the same time, peer rejection can foreshadow later behavior problems (especially when children are rejected due to aggressive behavior). With increasing age, children confront the challenges of bullying, peer victimization, and managing conformity pressures. Social comparison with peers is an important means by which children evaluate their skills, knowledge, and personal qualities, but it may cause them to feel that they do not measure up well against others. For example, a boy who is not athletic may feel unworthy of his football-playing peers and revert to shy behavior, isolating himself, and avoiding conversation. Conversely, an athlete who does not "get" Shakespeare may feel embarrassed and avoid reading altogether. Also, with the approach of adolescence, peer relationships become focused on psychological intimacy, involving

personal disclosure, vulnerability, and loyalty (or its betrayal)—which significantly influences a child's outlook on the world. Each of these aspects of peer relationships requires developing very different social and emotional skills than those that emerge in parent-child relationships. They also illustrate the many ways that peer relationships influence the growth of personality and self-concept.

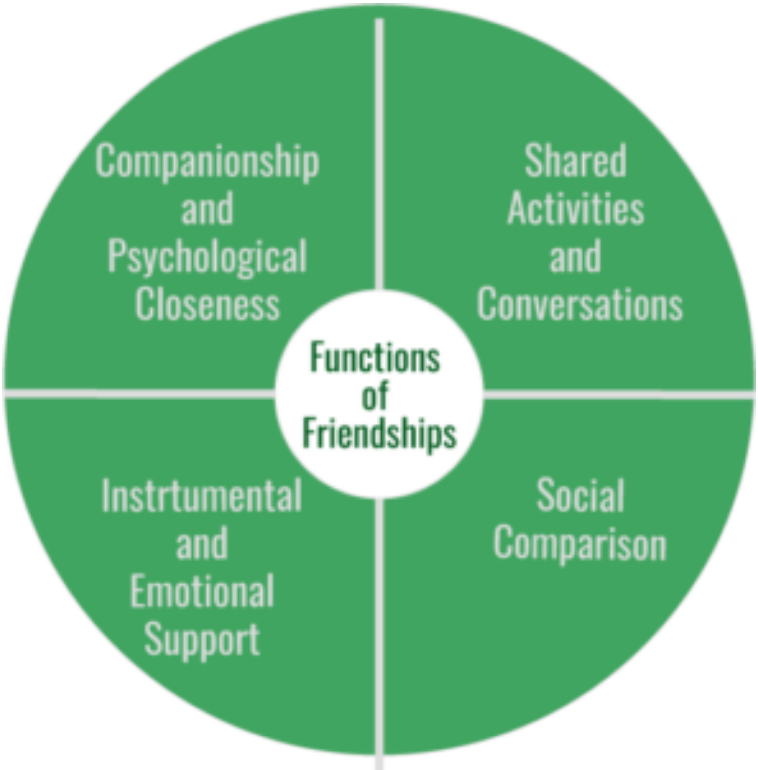


Figure 1. Functions of friendship. By Florida State College at Jacksonville, licensed under CC-BY 4.0 .

As children become adolescents, they usually begin spending more time with their peers and less time with their families, and

these peer interactions are increasingly unsupervised by adults. Children's notions of friendship often focus on shared activities, whereas adolescents' notions of friendship increasingly focus on intimate exchanges of thoughts and feelings.

During adolescence, peer groups evolve from primarily single-sex to mixed-sex. Adolescents within a peer group tend to be similar to one another in behavior and attitudes, which has been explained as being a function of **homophily** (adolescents who are similar to one another choose to spend time together in a "birds of a feather flock together" way) and influence (adolescents who spend time together shape each other's behavior and attitudes).

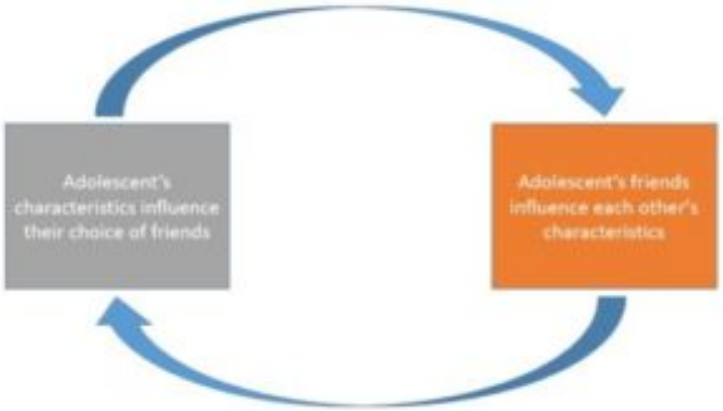


Figure 2. Reciprocal influences on friend selection and personal characteristics.

Peer pressure is usually depicted as peers pushing a teenager to do something that adults disapprove of, such as breaking laws or using drugs. One of the most widely studied aspects of adolescent peer influence is known as **deviant peer contagion** (Dishion & Tipsord, 2011). This influence is the process by which peers reinforce problem behavior by laughing or showing other signs of approval that then increase the likelihood of future problem behavior. Although deviant peer contagion is more extreme, regular

peer pressure is not always harmful. Peers can serve both positive and negative functions during adolescence. Negative peer pressure can lead adolescents to make riskier decisions or engage in more problematic behavior than they would alone or in the presence of their family. For example, adolescents are much more likely to drink alcohol, use drugs, and commit crimes when they are with their friends than when they are alone or with their families. However, peers also serve as an essential source of social support and companionship during adolescence, and adolescents with positive peer relationships are happier and better adjusted than those who are socially isolated or who have conflictual peer relationships.



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Crowds are an emerging level of peer relationships in adolescence. In contrast to friendships (which are reciprocal dyadic relationships) and **cliques** (which refer to groups of individuals who interact frequently), crowds are characterized more by shared reputations or images than actual interactions (Brown & Larson, 2009)These crowds reflect different prototypic identities (such as jocks or brains) and are often linked with adolescents' social status and peers' perceptions of their values or behaviors. Eventually, these crowds and cliques become less critical to teens as they place more value on close friendships and romantic relationships.

Crowds

Crowds are large groups of adolescents socially connected by a shared image and reputation (Brown, 2004), especially within the setting of a single school. A single person can belong to more than one crowd if their image matches the crowds' criteria (Brown, 2004; Mory, 1994). Because membership in a crowd depends on peers' perceptions, crowds in any given peer group will correspond to the local preconceived "types" of adolescents. Specific stereotypes vary from place to place, but many remain consistent. They are based on peer status, socioeconomic status, residential area, activities, social characteristics, or a combination of attributes (jocks, nerds, populars, and druggies are among the most commonly observed) (Brown, 2004; Mory, 1994; Arnett, 2002). Crowds are very different from cliques: while cliques are relatively small, close-knit groups based on frequent interaction and collectively determined membership, members of a crowd may not even know each other. Crowd membership reflects external assessments and expectations, providing a social context for identity exploration and self-definition as adolescents internalize or reject their crowd identities.

Because crowd membership is initially outwardly imposed, an adolescent's peers can classify them as belonging to a crowd that they do not consider themselves a member. Members of some crowds are more aware of and comfortable with their crowd designation than others; members of stigmatized or low-status groups, in particular, may resist or deny their undesirable categorization (Brown et al., 1992). Usually, however, adolescents embrace their crowd affiliation, using it to define themselves and advertise where they fit in their peer group's social structure (Newman & Newman, 2001; Brown et al., 1990).

Crowds and Identity Development

Crowds serve an essential purpose in adolescent identity development, shaping individual values, behavior, and personal and peer expectations. "[One's group] is often tantamount to one's own provisional identity" (Brown et al., 1994); the individual defines themself by the crowd to which they see themself belonging. Different crowds expose the individual to different norms. These norms encourage adolescents to interact with some people while avoiding others and reward certain behaviors while discouraging others, a process of normative social influence (Brown et al., 1990; Brown et al., 1994; Brown et al., 1995; Brown & Larson, 2009). For example, a member of a "preppy" crowd might be rewarded for dressing in a fashion for which a member of an "emo" crowd would be teased, and vice versa.

Crowd effects on norms of interaction:

- Norms affect how the individual interacts with others. Members of high-status (preppie, popular) groups often interact with many people, but most of these relationships are superficial and instrumental; interpersonal connections are used to establish and maintain social status (Eder, 1985; Lesko, 1988). By contrast, members of lower-caste groups (e.g., dorks, druggies) generally have fewer friends, mostly from within the crowd; however, these relationships are typically marked by greater loyalty, stability, and honesty (Lesko, 1988).
- Norms affect with whom the individual interacts. Crowds steer the individual toward certain people, attitudes, and behaviors. There are also effects of peer perception and expectations when individuals attempt to interact across crowds. In essence, one may be interested in a cross-crowd friendship, but whether or not the target reciprocates depends on their crowd's norms as well. The adolescent's social options for friendship and romance are limited by their crowd and by

other crowds (Brown et al., 1994).

Often crowds reinforce the behaviors that initially caused an individual to be labeled part of that crowd, which can positively or negatively influence the individual (toward academic achievement or drug use, for example). These pressures are often linked to the stereotypes members of crowds hold about themselves and members of other crowds: unity by the denigration of the outgroup (Brown et al., 1994).

Racial Crowds and Sub-Crowds

Adolescents' perception of crowd differences may depend on how closely related the adolescent observer is to a particular crowd. The primary, recurring crowd divisions (jocks, geeks, partiers) have been most often studied in predominantly white high schools, but they also exist for minority students. In multiracial schools, students seem to divide along ethnic lines first, then into these archetypical crowds within their ethnicity. However, one ethnic group may not notice the further divisions in other ethnic groups after the first, race-based split (Brown & Mounts, 1989). For instance, black students see themselves as divided into jocks, geeks, emos, stoners, popular kids, and so on, but white students may see them as just one crowd defined solely by ethnicity, "the black kids." Sometimes crowd membership transcends race, however, and adolescents are classified as "jocks" or "geeks" regardless of race (Horvat & Lewis, 2003; Tyson et al., 2005). This classification seems to vary and depends heavily on the context of the individual school.

Stereotypes, Stigma, and Cross-Crowd Friendships

While crowds are structured around prototypical caricatures of their members, real adolescents rarely match these extremes. Furthermore, not all adolescents agree on the characteristics typical of a stereotype (Brown et al., 1994). In other words, a regular manifestation of just a few central characteristics of a crowd is a sufficient basis for classification as a member of that crowd. Thus, not all "jocks" neglect their schoolwork, though that is part of the typical jock stereotype, and a person interested in fashion could still be considered a "geek."

Often a crowd is stigmatized by one or more other crowds. This stigmatization can affect adolescents' willingness to associate with members of that crowd, or even other crowds similar to it. For example, people may avoid being seen as a "brain," a middle-status crowd, because of the similarity between brains and "nerds," a lower-status crowd (Brown et al., 1990).

Shared interests form the basis of many friendships, so often adolescents are drawn to members of their own crowds, especially if their crowd is defined by activities rather than more superficial characteristics such as race or socioeconomic status. However, interests can be shared across crowd divisions. Accordingly, while an adolescent's closest friends are almost always part of the same clique (i.e., they interact frequently within the same small friend group), they are not always part of the same crowd, especially if multiple crowds have similar lifestyles (Brown et al., 1994).

Crowd-Hopping

Further emphasizing the flexible nature of crowd membership, some adolescents are not stably linked to one specific crowd—some

individuals are associated with multiple crowds, while others are not stably linked to any crowds and "float" among several. These appear more closely attached to individuals outside the peer group (family, dropout friends, friends from a non-school organization, etc.). Others may consciously work to change crowd affiliations to express different interests or achieve a change in social status. The crowd with which an adolescent desires to be identified is far less stable than the personal attributes by which the adolescent is likely to be categorized by peers. Accordingly, adolescents who change crowd membership (a process known as "crowd-hopping") tend to have lower self-esteem, perhaps because they have not yet found an environment and peer group that supports them. They likely continue changing crowd membership until they find a fulfilling niche (Brown et al., 1992).

The Rise of Crowds

Crowds first emerge in middle or junior high school, when children transition from stable, self-contained classroom peer groups into larger schools, where they interact with a more diverse body of peers with less adult guidance. Crowds emerge to group students by caricature and structure interactions between students of each type (Brown et al., 1994). Early crowds are often based on social status, especially among girls, with a small group of well-known children being "popular" and the rest "unpopular." To maintain their status, popular girls will avoid the overtures of less-popular children, which actually makes them disliked (Eder, 1985). Many children stop attempting to gain entry into the popular crowd and make friends with other children instead, giving rise to new crowds (Brown et al., 1994).

The stereotypes on which crowd definitions are based change over time as adolescents shift from grouping people by abstract characteristics rather than activities ("geeks" rather than "the kids

who read a lot"). With age, adolescents become more conscious of crowd divisions and the social hierarchy (Brown, 2004). Distinctions between crowds also become more nuanced, developing from simple popular/unpopular dichotomies to less hierarchical structures in which there are more than two levels of social acceptability, often with several crowds at each level (Kinney, 1993; Horn, 2003). As seen in cross-crowd friendships, some crowds interact with each other more readily than others. This transition to a more fluid social structure allows adolescents to change their status over time by changing crowds, remaining in a crowd that undergoes a change in status, or gaining the confidence and perspective to reject the assumptions of the social hierarchy (Brown et al., 1994; Kinney, 1993). Willingness to do so reflects a growing sense of personal identity distinct from crowd membership.

The Decline of Crowds

Adolescents' attitudes toward crowds change over time—while ninth-graders are willing to discriminate against members of other crowds, twelfth-graders are less likely to do so (Horn, 2003). Adolescents also develop more multifaceted self-concepts and reject crowd labels as simplistic attempts to describe an entire personality (Brown et al., 1994). Across the high school years, crowd significance as a basis for affiliation wanes (Horn, 2003), as does the influence of crowds on an individual's behavior (Brown, 2004). In fact, some studies indicate the importance of crowds peaks at age 12 or 13 (Brown et al., 1986). By the end of high school, adolescents often feel constrained by impersonal, crowd-derived identities (Larkin, 1979). This constraint, combined with the splintering off of romantic couples from the rest of the crowd, may account for the decline of crowd significance over time(Kuttler & La Greca, 2004).

Cliques



A **clique** is a group of individuals who interact with one another and share similar interests. Interacting with cliques is part of normative social development regardless of gender, ethnicity, or popularity. Although cliques are most commonly studied during adolescence and middle childhood development, they exist in all age groups. They are often bound together by shared social characteristics such as ethnicity and socioeconomic status (Labrum, 2016).

Typically, people in a clique will not have a completely open friend group and can, therefore, "ban" members if they do something considered unacceptable, such as talking to someone disliked. Some cliques tend to isolate themselves as a group and view themselves as superior to others, which can be demonstrated through bullying and other antisocial behaviors.

One person may be part of multiple cliques, each forming and functioning independently from one another. Cliques are relevant in society due to the social influence or peer pressure that results from the interactions with individuals who share a common characteristic. The outcomes associated with clique formations may be endless, with varying degrees of influence (Miller, 1958). So, a formal clique, such as a professional organization, would have a different kind of influence as compared to a social clique consisting of close friends.

A clique can also involve a high degree of social commitment to a specific group. A stronger level of commitment results in an individual having a reduced amount of interaction with other social groups. Cliquish behavior often involves repetition with regard to activities, vernacular, preferences, and manner, which can result in

conflict with other cliques, creating "outsiders." Individuals can also experience social isolation within their clique if their values and/or behavior begin to differ from the rest of the group.

Every clique has some form of organization that makes up the network of social interaction (Peay, 1974). Informal clique networks are groups that do not have a legitimate organizational structure in which they can be established and dissolved in a shorter period. An informal clique may consist of a person's friend group or co-workers, while it may also identify other, more informal groups, such as criminal gangs (Krackhardt, 1988). On the other hand, a formal clique is a group with a socially accepted organization that is hierarchical in structure. A formal clique is composed of members who have identifiable roles and interactions with one another and is found in the structure of numerous professional organizations, businesses, and even family structure. Culture is a very influential factor in the organization of clique structures because the boundaries established through differences in cultural aspects are persistent, even when the membership varies from time to time. For example, the differences in language, beliefs, traditions, etc. have always created a distinct separation or boundary between groups of people even though the members of that particular group are continually changing (Barth, 1998).

Development of Cliques

The formation and deformation of clique structures do not end with adolescence, even though the number of interactions with clique groups decreases, and the type of groups may change. As individuals become adults, their social interpretations alter, and the formation of their cliques originates from their immediate environment, rather than from common social characteristics (Carstensen, 2016). A clique should not be confused with a crowd because the smaller size and specific boundaries of a group

are what causes the group formation to be considered a clique. A clique can develop in several different ways and within environments that consist of individuals who interact regularly. The structural cohesion of the clique is the constant face-to-face interaction between members that can either create or dissolve the group, depending upon the level of interaction. If face-to-face interaction is regularly established, then cohesion between individuals will form. However, if the face-to-face interaction depreciates, then the cohesive social bond between said individuals will eventually dissolve (Friedkin, 1984).

Social impact of Cliques

A clique may inhibit external social influence by impacting the emotions, opinions, or behaviors of group members (Hochschild, 1979). There are many ways in which the perception of information between members in a clique can influence other members on a greater level than if they had received the same information from a different source. For example, receiving information from a close friend or family member is interpreted and responded to differently compared to receiving the same information from someone who is not within the clique structure. The satisfaction, interaction, and closeness between the clique groups that we involve ourselves in develops and changes throughout the years. Nevertheless, there is always a constant morphing of both the individual and the group as time goes on.

Homosociality to Heterosociality

Homosociality is the relationship between people of the same-sex, not romantic in nature. In children and young adolescence, more

friendships are with peers of the same sex. As adolescents mature, they become open to **heterosociality**, having relationships with people of the opposite sex, and **bisociality**, having relationships with same- and opposite-sex peers.

This process tends to occur in stages, as children transition from almost exclusive homosociality to heterosociality and eventually to romantic relationships. In stage one of this progression, cliques are same-sex and segregated from the opposite sex. In the second stage, opposite-sex cliques with similar interests start to associate. During the third stage, sex-segregated cliques break down, often with clique leaders pairing off into close friendships and romantic relationships. The fourth stage is when other clique members also leave the homosocial clique for hetero- and bisocial or romantic relationships. By stage five, cliques are less important to teens, and close or romantic relationships are the priority.

Cliques, Crowds, and Conformity

Video 1. *Adolescence, Cliques, Crowds, Conformity* discusses the different peer groups and the influence on youth culture.



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Romantic Relationships

Adolescence is the developmental period during which romantic relationships typically first emerge. Initially, same-sex peer groups that were common during childhood expand into mixed-sex peer groups that are more characteristic of adolescence. Romantic relationships often form in the context of these mixed-sex peer groups (Connolly, Furman, & Konarski, 2000).

Although romantic relationships during adolescence are often short-lived rather than long-term committed partnerships, their importance should not be minimized. Adolescents spend a great deal of time focused on romantic relationships, and their positive and negative emotions are more tied to romantic relationships (or lack thereof) than to friendships, family relationships, or school (Furman & Shaffer, 2003). Romantic relationships contribute to adolescents' identity formation, changes in family and peer relationships, and adolescents' emotional and behavioral adjustment.

Furthermore, romantic relationships are centrally connected to adolescents' emerging sexuality. Parents, policymakers, and researchers have devoted a great deal of attention to adolescents' sexuality, in large part because of concerns related to sexual intercourse, contraception, and preventing teen pregnancies. However, sexuality involves more than this narrow focus. Romantic relationships are a domain in which adolescents experiment with new behaviors and identities.

Sociometric Status

A child's status among their peers will influence their membership in peer groups and their ability to make friends. **Sociometric status** is a measurement that reflects the degree to which someone

is liked or disliked by their peers as a group. In developmental psychology, this system has been used to examine children's status in peer groups, its stability over time, the characteristics that determine it, and the long-term implications of one's popularity or rejection by peers.

The most commonly used sociometric system, developed by Coie & Dodge (1988), asks children to rate how much they like or dislike each of their classmates and uses these responses to classify them into five groups.

		Number of "least liked" nominations		
		Many		Few
Number of "most liked" nominations	Many	Controversial		Popular
			Average	
	Few	Rejected		Neglected

Figure 3. Sociometric peer statuses.

Popular children are those liked by many of their peers and disliked by few. These individuals are skilled at social interactions and maintain positive peer relationships. They tend to be cooperative, friendly, sociable, and sensitive to others. They are capable of being assertive without being aggressive, thus can get what they want without harming others. Among this group, there may be distinct levels of popularity:

- **Accepted** kids are the most common sub-group among the popular. While they are generally well-liked, they are not as magnetic as the very popular kids.
- **Very popular** kids are highly charismatic and draw peers to them.

Rejected children are designated as rejected if they receive many

negative nominations and few positive nominations. These individuals often have poor academic performance and more behavior problems in school. They are also at higher risk for delinquent behaviors and legal problems. These kids are more likely to be diagnosed with ADHD, conduct disorder, and substance abuse. They tend to be isolated, lonely and are at risk for depression. Rejected youth can be categorized into two types:

- **Aggressive-rejected** kids display hostile and threatening behavior, are physically aggressive, and disruptive. They may bully others, withhold friendship, ignore and exclude others. While they are lacking, they tend to overestimate their social competence.
- **Withdrawn-rejected** kids are socially withdrawn, wary, timid, anxious in social situations, and lack confidence. They are at risk of being bullied.

Individuals that are liked by many peers, but also dislike by many are designated as **controversial**. This group may possess characteristics of both the popular and the rejected group. These individuals tend to be aggressive, disruptive, and prone to anger. However, they may also be cooperative and social. They are often socially active and a good group leader. Their peers often view them as arrogant and snobbish.

The **neglected** children are designated as neglected if they receive few positive or negative nominations. These children are not especially liked or disliked by peers and tend to go unnoticed. As a result, they may be isolated and especially avoid confrontation or aggressive interactions. This group does tend to do well academically.

Finally, the **average** kids are designated as such because they receive an average number of both positive and negative nominations. They are liked by a small group of peers, but not disliked by very many.

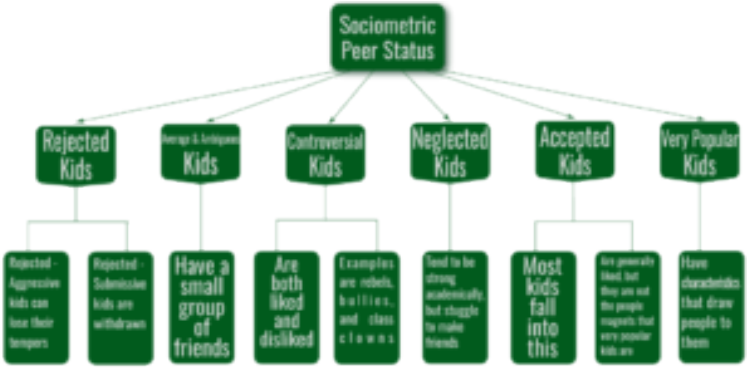


Figure 4. Sociometric peer statuses and characteristics.

Popularity

What makes a child popular? Several physical, cognitive, and behavioral factors impact popularity. First, adolescents that are perceived to be physically attractive tend to be more popular among their peers. Cognitive traits matter too. Individuals that demonstrate higher intelligence and do well academically tend to be more liked. Also, those that can take another's perspective and demonstrate social problem-solving skills are favored. Kids that can manage their emotions and behave appropriately gain higher status. Finally, kids like peers that are confident without being conceited.

Interventions

What can be done to help those that are not well-liked? For neglected kids, social skills training and encouraging them to join activities can help them become noticed by their peers and make

friends. For rejected kids, they may need support to help with anger management, to overcome anxiety, and cope with depression. This group can also benefit from social skills training to learn social competence and gain confidence.



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Bullying

Bullying is unwanted, aggressive behavior among school-aged children that involves a real or perceived power imbalance. The behavior is repeated, or has the potential to be repeated, over time. Both kids who are bullied and who bully others may have serious, lasting problems.

In order to be considered bullying, the behavior must be aggressive and include:

- An Imbalance of Power: Kids who bully use their power—such as physical strength, access to embarrassing information, or popularity—to control or harm others. Power imbalances can change over time and in different situations, even if they involve the same people.
- Repetition: Bullying behaviors happen more than once or have the potential to happen more than once.

Bullying includes actions, such as making threats, spreading rumors,

attacking someone physically or verbally, and excluding someone from a group on purpose. Bullying is not peer conflict, dating violence, hazing, gang violence, harassment (legal definition), or stalking. While these issues may also be problematic, they do not meet the criteria for bullying behavior.

Types of Bullying

There are several types of bullying, and it is not unusual for a bully to utilize more than one type. **Verbal bullying is** saying, or writing mean things and may include behaviors like teasing or name-calling, inappropriate sexual comments, taunting, and threatening to cause harm. **Social bullying is** sometimes referred to as relational bullying. It involves behaviors such as hurting someone's reputation or relationships by purposely excluding them or getting others to exclude them, spreading rumors about someone, or embarrassing someone in public. **Physical bullying is** hurting a person's body or possessions by hitting, kicking, or pinching, spitting, tripping or pushing, taking or breaking someone's things, or making mean or rude hand gestures.

The Roles in Bullying

There are many roles that individuals may take in bullying situations. Kids can bully others, they can be bullied, or they may witness bullying. Some may play more than one role, sometimes being both bullied and the bully. It is important to understand the multiple roles involved in these situations in order to prevent and respond to bullying effectively.

Importance of Not Labeling Kids

When referring to a bullying situation, it is easy to call the kids who bully others "bullies" and those who are targeted "victims," but this may have unintended consequences. When children are labeled as "bullies" or "victims," it may send the message that the individual's behavior cannot change. It also fails to recognize the multiple roles one might play in different bullying situations. Labeling also disregards other factors contributing to the behavior such as peer influence or school climate.

Instead of labeling the teens involved, focus on the behavior. For instance, instead of calling someone a "bully," refer to them as "the person who bullied." Instead of calling a person a "victim," refer to them as "the person who was bullied."

The Role of Bully

The roles individuals play in bullying are not limited to those who bully others and those who are bullied. Some researchers talk about the "circle of bullying" to define both those directly involved in bullying and those who actively or passively assist the behavior or defend against it. Direct roles include:

- **Those who Bully**: These teens engage in bullying behavior towards their peers. There are many risk factors that may contribute to their involvement in the behavior. Often, these kids require support to change their behavior and address any other challenges that may be influencing their behavior.
- **Those who are Bullied**: These teens are the targets of bullying behavior. Some factors put them at more risk of being bullied, but not all kids with these characteristics will be bullied. Sometimes, these individuals may need help learning how to respond to bullying.

Witnesses to Bullying

Even if a person is not directly involved in bullying, they may be contributing to the behavior. Witnessing the behavior may also affect the situation, so they need to learn what they should do when they see bullying happen. Roles kids play when they witness bullying include:

- **Those who Assist**: These individuals may not start the bullying or lead in the bullying behavior, but serve as an "assistant" to those who are bullying. These kids may encourage bullying behavior and occasionally join in.
- **Those who Reinforce**: These kids are not directly involved in the bullying behavior, but they give the bullying an audience. They will often laugh or provide support for those who are engaging in bullying. This may encourage the bullying to continue.
- **Outsiders**: These individuals remain separate from the bullying situation. They neither reinforce the bullying behavior nor defend the person being bullied. Some may watch what is going on but do not provide feedback about the situation to show they are on anyone's side. Even so, providing an audience may encourage bullying behavior. These witnesses may want to help but do not know-how.
- **Those who Defend**: These witnesses actively comfort the person being bullied and may come to their defense when bullying occurs.

Most participants play more than one role in bullying over time. In some cases, they may be directly involved in bullying as the one bullying others or being bullied. In others, they may witness bullying and play an assisting or defending role. Every situation is different. Some kids are both bullied and bully others. It is important to note the multiple roles kids play, because those who are both bullied and bully others may be at more risk for adverse outcomes, such

as depression or suicidal ideation. Also, it highlights the need to engage all kids in prevention efforts, not just those who are known to be directly involved.

Bystanders: Become an Upstander to Bullying

Video 2. *Bystander* discusses the roles of a bullying incident and how bystanders may be key to preventing and stopping bullying.



One or more interactive elements has been excluded from this version of the text. You can view them online here: https://childpsychology.pressbooks.sunycreate.cloud/?p=102#oembed-2

Who Is at Risk?

No single factor puts a child at risk of being bullied or bullying others. Bullying can happen anywhere—cities, suburbs, or rural towns. Depending on the environment, some groups—such as lesbian, gay, bisexual, transgender, or questioning (LGBTQ) youth, youth with disabilities, and socially isolated youth—may be at an increased risk of being bullied.

Those at Risk of Being Bullied

Generally, those who are bullied have one or more risk factors. Adolescents that are perceived as different from their peers, such as being overweight or underweight, wearing glasses or different clothing, being new to a school, or being unable to afford what kids consider "cool" are at risk for bullying. As are those perceived as weak or unable to defend themselves or are less popular than others and have few friends. Also, at risk for bullying are those that are depressed, anxious, or have low self-esteem. Finally, those that do not get along well with others, are seen as annoying or provoking, or antagonize others for attention are more likely to be bullied. However, even if a child has these risk factors, it does not mean that they will be bullied.

Those More Likely to Bully Others

There are two types of kids who are more likely to bully others. The first is well-connected to their peers, have social power, are overly concerned about their popularity, and like to dominate or be in charge of others. The others are more isolated from their peers and may be depressed or anxious, have low self-esteem, be less involved in school, be easily pressured by peers, or not identify with the emotions or feelings of others.

There are specific risk factors that make someone more likely to bully others. Those that are aggressive or easily frustrated, have difficulty following rules, and view violence in a positive way are more likely to bully. Also, those that think badly of others and have friends who bully are at higher risk for the same behavior. Finally, kids that have less parental involvement or are having issues at home may display more bullying behaviors.

Remember, those who bully others do not need to be stronger

or bigger than those they bully. The power imbalance can come from several sources—popularity, strength, cognitive ability—and children who bully may have more than one of these characteristics.

Warning Signs of Bullying

There are many warning signs that may indicate that someone is affected by bullying—either being bullied or bullying others. Recognizing the warning signs is an essential first step in taking action against bullying. Not all children who are bullied or are bullying others ask for help.

It is important to talk with children who show signs of being bullied or bullying others. These warning signs can also point to other issues or problems, such as depression or substance abuse. Talking to the child can help identify the root of the problem.

Signs of Being Bullied

Look for changes in the child. However, be aware that not all children who are bullied exhibit warning signs. Some signs that may point to a bullying problem are unexplainable injuries or lost and destroyed clothing, books, electronics, or jewelry. Those being bullied may report frequent headaches or stomach aches, feeling sick or faking illness. They may have changes in eating habits, like suddenly skipping meals or binge eating. Kids may come home from school hungry because they did not eat lunch. They may also have difficulty sleeping or frequent nightmares.

Signs of Bullying Others

Kids may be bullying others if they get into physical or verbal fights or have friends who bully others. They may demonstrate increasing levels of aggressive behavior and get sent to the principal's office or detention frequently. They may also have unexplained extra money or new belongings.

Why Don't Kids Ask for Help?

Statistics from the 2012 Indicators of School Crime and Safety show that an adult was notified in less than half (40%) of bullying incidents. Kids do not tell adults for many reasons. Fo one, bullying can make a child feel helpless. Kids may want to handle it on their own to feel in control again. They may fear being seen as weak or a tattletale. Kids may fear backlash from the kid who bullied them. Bullying can be a humiliating experience. Kids may not want adults to know what is being said about them, whether true or false. They may also fear that adults will judge them or punish them for being weak. Kids who are bullied may already feel socially isolated. They may feel like no one cares or could understand. Finally, kids may fear being rejected by their peers. Friends can help protect kids from bullying, and kids can fear of losing this support.

Effects of Bullying

Bullying can affect everyone—those who are bullied, those who bully, and those who witness bullying. Bullying is linked to many negative outcomes, including impacts on mental health, substance use, and suicide. It is important to talk to kids to determine whether bullying—or something else—is a concern.

Kids Who Are Bullied

Kids who are bullied can experience negative physical, school, and mental health issues. Kids who are bullied are more likely to experience depression and anxiety, increased feelings of sadness and loneliness, changes in sleep and eating patterns, and loss of interest in activities they used to enjoy. These issues may persist into adulthood. They may have more health complaints. Decreased academic achievement and school participation is a common effect of being bullied. They are also more likely to miss, skip, or drop out of school. A very small number of bullied kids might retaliate through extremely violent measures. In 12 of 15 school shooting cases in the 1990s, the shooters had a history of being bullied.

Kids Who Bully Others

Kids who bully others can also engage in violent and other risky behaviors into adulthood. Kids who bully are more likely to abuse alcohol and other drugs in adolescence and as adults. They are also more likely to get into fights, vandalize property, and drop out of school. They have criminal convictions and traffic citations as adults. They may engage in early sexual activity. They are also more likely to be abusive toward their romantic partners, spouses, or children as adults.

Bystanders

Kids who witness bullying are more likely to miss or skip school. They are also more like to use tobacco, alcohol, or other drugs. Bystanders are at increased risk of developing mental health problems, including depression and anxiety.

The Relationship Between Bullying and Suicide

Media reports often link bullying with suicide. However, most youth who are bullied do not have thoughts of suicide or engage in suicidal behaviors. Although kids who are bullied are at risk of suicide, bullying alone is not the cause. Many issues contribute to suicide risk, including depression, problems at home, and trauma history. Additionally, specific groups have an increased risk of suicide, including American Indian and Alaskan Native, Asian American, lesbian, gay, bisexual, and transgender youth. This risk can be increased further when these kids are not supported by parents, peers, and schools. Bullying can make an unsupportive situation worse.

Special Concern: Cyberbullying

Cyberbullying is bullying that takes place over digital devices like cell phones, computers, and tablets. Cyberbullying can occur through SMS, Text, and apps, or online in social media, forums, or gaming where people can view, participate in, or share content. Cyberbullying includes sending, posting, or sharing negative, harmful, false, or mean content about someone else. It can include sharing personal or private information about someone else, causing embarrassment or humiliation. Some cyberbullying crosses the line into unlawful or criminal behavior.

With the prevalence of social media and digital forums, comments, photos, posts, and content shared by individuals can often be viewed by strangers, as well as acquaintances. The content an individual shares online — both their personal content as well as any negative, mean, or hurtful content — creates a kind of permanent public record of their views, activities, and behavior. This public record can be thought of as an online reputation, which

may be accessible to schools, employers, colleges, clubs, and others who may be researching an individual now or in the future. Cyberbullying can harm the online reputations of everyone involved – not just the person being bullied, but those doing the bullying or participating in it. Cyberbullying has unique concerns in that it can be:

- **Persistent**: Digital devices offer the ability to immediately and continuously communicate 24 hours a day, so it can be difficult for children experiencing cyberbullying to find relief.
- **Permanent**: Most information communicated electronically is permanent and public, if not reported and removed. A negative online reputation, including for those who bully, can impact college admissions, employment, and other areas of life.
- **Hard to Notice**: Because teachers and parents may not overhear or see cyberbullying taking place, it is harder to recognize.

Cyberbullying and Online Gaming

Playing video games is a popular activity, with 72 percent of teens gaming online. Many video games — whether they are console, web, or computer-based — allow users to play with friends they know in person and others they have met only online. While gaming can have positive benefits like making new friends, socializing, and learning how to strategize and problem solve, it is also another place where cyberbullying occurs.

The anonymity of players and the use of avatars allow users to create alter-egos or fictional versions of themselves, which is part of the fun of gaming. However, it also allows users to harass, bully, and sometimes gang up on other players, sending or posting negative or hurtful messages and using the game as a tool of harassment. If someone is not performing well, other children may curse or make

negative remarks that turn into bullying, or they might exclude the person from playing together.

Because players are anonymous, they cannot necessarily be held accountable for their behavior, and their harassment can cause some players to leave games. Some anonymous users use the game as a means to harass strangers or to get their personal information, like user names and passwords.

There are things adults can do to prevent cyberbullying of children who are gaming. Parents should play the game or observe when the gaming happens to understand how it works and what a child is exposed to in the game. Check-in periodically with children about who is online, playing the game with them. Teach children about safe online behavior, including not clicking on links from strangers, not sharing personal information, not participating in bullying behavior of other players, and what to do if they observe or experience bullying. Establish rules about how much time a child can spend playing video games.

Warning Signs of Cyberbullying

Many of the warning signs that cyberbullying is occurring happen around a child's use of their device. Some of the warning signs that a kid may be involved in cyberbullying include noticeable increases or decreases in device use. Kids may exhibit unusual emotional responses (laughter, anger, upset) to what is happening on their device. A teen hides their screen or device when others are near, and avoids discussion about what they are doing on their device. There may be sudden changes to social media accounts, with accounts being shut down or new ones appear. If a teen starts to avoid social situations, even those that were enjoyed in the past. Alternatively, if they become withdrawn or depressed, or loses interest in people and activities.

What to Do When Cyberbullying Happens

When warning signs that a child may be involved in cyberbullying, adults should take steps to investigate that kid's digital behavior. Cyberbullying is a form of bullying, and adults should take the same approach to address it: support the person being bullied, address the bullying behavior of a participant, and show all involved that cyberbullying is taken seriously. Because cyberbullying happens online, responding to it requires different approaches. If an adult thinks that cyberbullying is occurring, several things can be done. First, *recognize* if there has been a change in mood or behavior and explore what the cause might be. Try to determine if these changes happen around a child's use of their digital devices. *Ask* questions to learn what is happening, how it started, and who is involved. *Document* what is happening and where. Take screenshots of harmful posts or content, if possible. Most laws and policies note that bullying is a repeated behavior, so records help to document it. *Report* issues to social media platforms and refer to the school's reporting policies. If a child has received physical threats, or if a potential crime or illegal behavior is occurring, report it to the police. *Provide support*. Peers, mentors, and trusted adults can sometimes intervene publicly to positively influence a situation where negative or hurtful content posts about a child. Public Intervention can include posting positive comments about the person targeted with bullying to try to shift the conversation in a positive direction. It can also help to reach out to the child who is bullying and the target of the bullying to express concern. If possible, try to determine if more professional support is needed for those involved, such as speaking with a guidance counselor or mental health professional.

Watch it

Video 3. *Ways to Stop Bullying.*



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Play

While play is often seen as something children do for leisure and recreation, play is actually a crucial part of a children's development. Play is a self-chosen and self-directed activity that is focused on the process of play and not the product of it. Play is individually constructed to meet the child's desires and needs. Finally, play is imaginative and active (Gray, 2013). Play is children's work. Through play, children develop cognitive skills and learn new information. They learn and practice social skills, like effective communication, self-regulation, conflict resolution, problem-solving, and cooperation. Furthermore, they learn about themselves by exploring roles, interests, skills, and relationships. Play is how children explore their world.

Types of Play

According to Piaget, children engage in types of play that reflect their level of cognitive development. Originally proposing three levels of play: functional play, symbolic play, and games with rules. Smilansky expanded on Piaget's model to add a fourth level: constructive play. Each type of play emerges at different ages and stages of cognitive development, and the prominence of the level of play changes with maturation, as well (Johnson, Christie & Wardle 2005).

Functional Play



Functional play is the first type of play activity in which children engage. Functional play involves repetitive, physical actions, language, and manipulation of objects. Beginning in infancy, children learn that they have control of their bodies and objects, and they can act upon those objects. Infants play through repetitive actions, like shaking a rattle, splashing in the bath, or repeatedly dropping toys from their high chair. These basic actions become play when the child deliberately engages in the activity for pleasure (Frost, 1992). Eventually, as children become more cognitively sophisticated, simple, repetitive actions are replaced by more complex, coordinated actions. Functional play is enjoyed by children throughout their childhood, particularly as they discover and practice new motor skills, such as sliding, climbing, stacking, jumping, and bouncing.

Constructive Play

By the age of two, children progress from simple, repetitive functional play to goal-directed, creative activities. When children manipulate objects to create something, they are engaging in **constructive play.** They use objects like blocks, clay, and craft supplies in an organized way to achieve a goal. Constructive play is a form of hand-on inquiry where children gain knowledge by posing questions, testing ideas, and gathering information (Drew et al., 2008) through experimentation with basic materials to create

something more complex. This type of play encourages planning, exploration, and discovery (Child Development Institute, 2010).



Constructive play facilitates the development of imagination, problem-solving skills, fine motor skills, and self-esteem. Build with blocks help children learn spatial relationships. Manipulating objects can translate into comfort with manipulating words, ideas, and concepts. This type of play prepares children for later academic, social, and emotional successes (Leong & Bodrova, 2015) and to be flexible thinking (Bruner 1972). Creating encourages the development of positive self-esteem by offering children power over their environment and a sense of accomplishment (Chaille, 2008). Constructive play also helps children develop character virtues, such as tenacity, flexibility, creativity, courage, enthusiasm, persistence, and adaptability (Child Development Institute, 2010).

Young children tend to prefer constructive play. When given a choice of play activities, preschool children choose constructive play more than 50% of the time (Rubin, Fein, & Vandenberg 1983). Further, constructive play is a way to scaffold play as children transition from function to symbolic play. Children should be encouraged to engage in constructive play by providing children with playtime and play materials for exploration. Providing inspiring materials is key to promoting constructive play.

Symbolic Play

Symbolic play is the ability of children to use objects, actions, or ideas to represent other objects, actions, or ideas in play. These activities may include role-playing or make-believe play, such as

pretending to be a baby, firefighter, or monster, and make-believe actions, such as driving a car by moving a pretend steering wheel, or using a banana as a telephone. This level of play is widely considered the most sophisticated play activity during the preschool and kindergarten years. Symbolic play encourages the development of social skills, academic abilities, early literacy concepts, and behavioral self-regulation (Leong & Bodrova 2015).



At around 18-months-old, toddlers begin to engage in pretend play, and type of symbolic play. They use objects to represent something else, like drinking from an empty cup or pretending to feed a doll. As children advance cognitive, linguistically, and socially, their play begins to include fantasy, drama, and imitation. Preschoolers are more capable of playing roles and incorporating social norms in their pretend play. Their role-plays and imagination become more sophisticated, and socialization becomes an important aspect of their play activities. Children assign roles to themselves and others, and their interactions often involve sequenced steps and a predetermined plan. Pretend play allows children to explore various roles and expectations and do participate in activities that they may not otherwise be allowed to explore in the real world. Through pretend play, children learn skills in negotiation, listening, sharing, taking turns, and respecting others' feelings, thoughts, ideas, and physical space.

The sophistication of symbolic play progresses through several substages. The substages include either the child acting a role, the child using an agent to act a role (such as a doll), or a group of children with different roles. These stages also include different types of objects in the play activity. Children may use objects that resemble the real-life object that this represents, such as using toy food to represent real food. Alternatively, the child may use

nonrealistic objects to represent real-life objects, such as using a stick as a for a horse.

Tabel 1. Substages of symbolic play development

Single pretend transformation toward self with realistic objects	Child takes role and uses object that resembles the real object, such as the child pretending to eat toy food.
Object is pretend agent with realistic objects	Child uses object that resembles real objects and that object is treated as if it acts, such as the child has a doll and act as if it is eating.
Single pretend transformation with nonrealistic object	Child uses object that has no resemblance to real objects, such as the child forms a pancake from molding clay.
Pretend role with realistic object	Child uses objects associated with a role that resembles real objects, such as the child pretends to be a cook with toy food.
Multiple pretend role transformations with realistic object	Child uses objects that resemble real-world objects while the child takes roles, such as doctor, patient, and nurse while playing with dolls or toy animals.
Pretend role with nonrealistic object	Child uses objects that have no resemblance to real objects, such as using molding clay to construct a farm.
Multiple pretend roles with realistic object	Children use objects that resemble real objects, such as a group of children use a toy doctor's kit and play the roles as doctor, patient, and nurse.
Multiple pretend roles with nonrealistic object	Children use objects that have no resemblance to real objects, such as molding clay to create the pretend setting and designate roles to enact.
Source: Frost et al., 2001	

> "In play a child is always above his average age, above his daily behavior; in play it is as though he were a head taller than himself. As in
> the focus of a magnifying glass, play contains all developmental tendencies in a condensed form; in play it is

> as though the child were trying to jump above the level of his normal behavior" (Vygotsk,1967, p.16).

While Piaget and others believed different types of play activities were essential to development, Vygotsky's definition of play was limited to pretend play. He believed that play must include the creation of an imaginary situation, assigning and acting out of roles, and following a set of rules specific to those roles (Bodrova & Leong, 2007). Play is a way for children to learn about symbols and separate thoughts from objects. Vygotsky saw play as a means to help children self-gratify. Through play, children can create fantasy situations to get their needs met, regulate emotions, and delay gratification. This level of play also aids children in learning self-regulation by following the rules and adhering to the roles of the play activity. Vygotsky believed that play provided scaffolding for learning to assist children in operating at the upper-end of their zone of proximal development.



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https://childpsychology.pressbooks.sunycreate.cloud/?p=103#oembed-1

Video 1. *Play: A Vygotskian Approach* explains Vygotsky's beliefs about the functions of play.

Smilansky also emphasized the importance of symbolic and pretend play. Her research in this area found that children that did not engage in this level of play displayed cognitive and emotional delays. This effect was especially present in underprivileged children. In response, Smilansky proposed that to facilitate children's development of pretend play, adults should encourage:

1. Imitative role play. The child pretends to play a role and expresses it in an imitates that role. For example, "I am the teacher, and you are my students."
2. Make-believe with objects. Use nonrealistic objects to represent real objects and actions. For example, pretending a stick is a horse and riding it.
3. Verbal make-believe. Incorporate verbal dialog and descriptions in place of actions. For example, "Let's pretend I cooked the dinner, and now I am setting the table" when only the last activity is actually imitated.
4. Persistence in role play. The pretend play episode lasts for at least 10 minutes.
5. Interaction. Two or more players interact within the context of a play episode.
6. Verbal communication. There is some verbal interaction with other players related to the play episode (Frost, 1992).

Games with Rules



The final type of play is **games with rules.** At this level, the play activity has imposed rules that must be followed by the players. To successfully participate at this level of play, children must have the cognitive ability to understand and remember the rules. These games also require the children to self-regulation, curbing their own desires and needs to adhere to the rules of the game. Games with rules are often characterized by logic and order, and as

children mature they can develop methods and planning in their game playing (Frost et al., 2004).

Through games with rules, school-age children develop an understanding of cooperation and competition. By initiating their own games with rules, children learn the need for rules, how to negotiate with each other, and fairness so that the game is enjoyable for everyone. Team sports and board games are games that have very specific rules and encourage the development of strategy. Electronic games are designed to target children at different stages of development and often encourage the practice and mastery of new skills through challenging tasks and fantasy (Frost et al., 2001).

Parten's Stages of Social Play

As we consider how play develops through childhood, we must also examine changes in socialization during playing. As children mature, they progress through several stages of non-social and social play. Parten's stages of social play is a theory that categorizes the ways in which children may socialize while participating in play during different periods of development. Parten observed American children at free play and recognized six different types of play. Three types she labeled as non-social (unoccupied, solitary, and onlooker), and three types were categorized as social play (parallel, associative, and cooperative). Parten also found that once a child has developed the ability to participate in a particular stage of social play, they will use combinations of that stage and earlier stages while playing. However, we find that younger children engage in non-social play more than those older and, by age five, associative and cooperative play are the most common forms of play (Dyer & Moneta, 2006).

Unoccupied



The earliest and least common style of play throughout childhood is the **unoccupied** stage. This is a non-social stage that starts in infancy and may appear as random behavior without a specific goal. During this time, the child is not playing. Sitting or standing still, random movements or movements without purpose that do not meet the above definition of play can all be considered unoccupied time. Infants and toddlers may spend significant parts of their day disengaged from any play, but the amount of time spent unoccupied should decrease as children age.

Solitary Play



Another non-social stage is **solitary play**. Common in children 2-3 years of age, this style of play involves a child playing alone and maintaining focus on their activity. They do not interact with others, nor are they interested in what others are doing. They also are not engaging in similar activities as the children around them. No matter the play activity, whether functional, constructive, symbolic, or game play, if the child is playing alone then it is solitary play.

Onlooker Play



Onlooker play is the final type of non-social play. During this style of play, children are observing others playing. The child may socialize with the other children, such as commenting on the activities and even make suggestions, but they will not directly join the play. Onlooker play is different from unoccupied play because, while the child is not participating in the play activity, they are engaged in social interaction and active observation. Children can still benefit from play activities that they observe, possibly learning behavior and rules before attempting participation.

Parallel Play



Sometimes seen as a transitory stage from immature non-social types to the more socially mature types of play, **parallel play** is when a child plays adjacent to, but not with, others. The child plays separately from others, engaged in their own play with their own goals; however, the children are close enough to observe and mimicking other's behaviors.

Associative Play



Around the age of 3, children will interact with each other and share toys; however, they are not yet working toward a common play goal. This more sophisticated social contact is **associative play**. The children will engage in the same play activity and show interest in what others are doing, but not in coordinating their activities with those people. There is a substantial amount of interaction involved, but the activities are not in sync.

Cooperative Play



When children are interacting to achieve a common goal, this is **cooperative play**. The child is interested both in the people playing and in coordinating their activities. In cooperative play, the activity is organized, participants have assigned roles, and children may take on different tasks to reach their shared goal. There is also increased self-identification with a group, and a group identity may emerge. This style of play is more common toward the end of the early childhood stage. Examples would be dramatic play activities with roles, like playing school, or a game with rules, such as freeze tag.

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Video 2. *The 6 Types of Play* provides an overview of Parten's stages of social play.

Imaginary Companions

An intriguing occurrence in early childhood is the emergence of imaginary companions. Researchers differ in how they define what qualifies as an imaginary companion. Some studies include only invisible characters that the child refers to in conversation, or plays with for an extended period. Other researchers also include objects that the child personifies, such as a stuffed toy or doll, or characters the child impersonates every day. Estimates of the number of children who have imaginary companions vary greatly (from as little as 6% to as high as 65%) depending on what is included in the definition (Gleason, Sebanc, & Hartup, 2000).

Little is known about why children create imaginary companions, and more than half of all companions have no obvious trigger in the child's life (Masih, 1978). Imaginary

companions are sometimes based on real people, characters from stories, or simply names the child has heard (Gleason et al., 2000). Imaginary companions often change over time. In their study, Gleason et al. (2000) found that 40% of the imaginary companions of the children they studied changed, such as developing superpowers, switching age, gender, or even dying, and 68% of the characteristics of the companion were acquired over time. This could reflect greater complexity in the child's "creation" over time and/or a greater willingness to talk about their imaginary playmates.

In addition, research suggests that contrary to the assumption that children with imaginary companions are compensating for poor social skills, several studies have found that these children are very sociable (Mauro, 1991; Singer & Singer, 1990; Gleason, 2002). However, studies have reported that children with imaginary companions are more likely to be first-borns or only-children (Masih, 1978; Gleason et al., 2000; Gleason, 2002). Although

not all research has found a link between birth order and the incidence of imaginary playmates (Manosevitz, Prentice, & Wilson, 1973). Moreover, some studies have found little or no difference in the presence of imaginary companions and parental divorce (Gleason et al., 2000), the number of people in the home, or the amount of time children are spending with real playmates (Masih, 1978; Gleason & Hohmann, 2006).

Do children treat real friends differently? The answer appears to be not really. Young children view their relationship with their imaginary companion to be as supportive and nurturing as with their real friends. Gleason has suggested that this might suggest that children form a schema of what is a friend, and use this same schema in their interactions with both types of friends (Gleason et al., 2000; Gleason, 2002; Gleason & Hohmann, 2006).

Moral Development

Theories of Moral Development

The founder of psychoanalysis, Freud (1962), proposed the existence of a tension between the needs of society and the individual. According to Freud, moral development proceeds when the individual's selfish desires are repressed and replaced by the values of important socializing agents in one's life (for instance, one's parents). A proponent of behaviorism, Skinner (1972) similarly focused on socialization as the primary force behind moral development. In contrast to Freud's notion of a struggle between internal and external forces, Skinner focused on the power of external forces (reinforcement contingencies) to shape an individual's development. While both Freud and Skinner focused on the external forces that bear on morality (parents in the case of Freud, and behavioral contingencies in the case of Skinner), Piaget (1965) focused on the individual's construction, construal, and interpretation of morality from a social-cognitive and social-emotional perspective.

Kohlberg (1963) expanded upon Piagetian notions of moral development. While they both viewed moral development as a result of a deliberate attempt to increase the coordination and integration of one's orientation to the world, Kohlberg provided a systematic 3-level, 6-stage sequence reflecting changes in moral judgment throughout the lifespan. Specifically, Kohlberg argued that development proceeds from a selfish desire to avoid punishment (personal), to a concern for group functioning (societal), to a concern for the consistent application of universal ethical principles (moral).

Turiel (1983) argued for a social domain approach to social cognition, delineating how individuals differentiate moral (fairness,

equality, justice), societal (conventions, group functioning, traditions), and psychological (personal, individual prerogative) concepts from early in development throughout the lifespan. Over the past 40 years, research findings have supported this model, demonstrating how children, adolescents, and adults differentiate moral rules from conventional rules, identify the personal domain as a nonregulated domain, and evaluate multifaceted (or complex) situations that involve more than one domain.

For the past 20 years, researchers have expanded the field of moral development, applying moral judgment, reasoning, and emotion attribution to topics such as prejudice, aggression, theory of mind, emotions, empathy, peer relationships, and parent-child interactions.

Piaget's Theory of Moral Development

To understand adult morality, Piaget believed that it was necessary to study both how morality manifests in the child's world as well as the factors that contribute to the emergence of central moral concepts such as welfare, justice, and rights. By interviewing children, Piaget (1965) found that young children were focused on authority mandates and that with age, children become autonomous, evaluating actions from a set of independent principles of morality.

He developed two phases of moral development, one common among children and the other common among adults.

Heteronomous Phase

The first is the Heteronomous Phase. This phase, more common among children, is characterized by the idea that rules come from

authority figures in one's life, such as parents, teachers, and God. It also involves the idea that rules are permanent no matter what. Thirdly, this phase of moral development includes the belief that "naughty" behavior must always be punished and that the punishment will be proportional. This absolutism in moral development is seen in children's play from the age of 5, where they exhibit a blind belief in the rules and ideas of right and wrong passed to them by their elders.

Autonomous Phase

The second phase in Piaget's theory of moral development is referred to as the Autonomous Phase. This phase is more common after one has matured and is no longer a child. In this phase, people begin to view the intentions behind actions as more important than their consequences. For instance, if a person who is driving swerves in order to not hit a dog and then knocks over a road sign, adults are likely to be less angry at the person than if he or she had done it on purpose just for fun. Even though the outcome is the same, people are more forgiving because of the good intention of saving the dog. This phase also includes the idea that people have different morals and that morality is not necessarily universal. People in the Autonomous Phase also believe rules may be broken under certain circumstances. For instance, Rosa Parks broke the law by refusing to give up her seat on a bus, which was against the law but something many people consider moral nonetheless. In this phase, people also stop believing in the idea of immanent justice.

Kohlberg's Theory of Moral Development

Psychologist Lawrence Kohlberg (1927–1987) extended upon the

foundation that Piaget built regarding moral and cognitive development. Kohlberg, like Piaget, was interested in moral reasoning. Moral reasoning does not necessarily equate to moral behavior. Holding a particular belief does not mean that our behavior will always be consistent with the belief. To develop this theory, Kohlberg posed moral dilemmas to people of all ages, and then he analyzed their answers to find evidence of their particular stage of moral development. After presenting people with this and various dilemmas, Kohlberg reviewed people's responses and placed them in different stages of moral reasoning. According to Kohlberg, an individual progresses from the capacity for pre-conventional morality (before age 9) to the capacity for conventional morality (early adolescence), and toward attaining post-conventional morality (once formal operational thought is attained), which only a few fully achieve.

Moral Stages According to Kohlberg

Using a stage model similar to Piaget's, Kohlberg proposed three levels, with six stages, of moral development. Individuals experience the stages universally and in sequence as they form beliefs about justice. He named the levels simply preconventional, conventional, and postconventional.

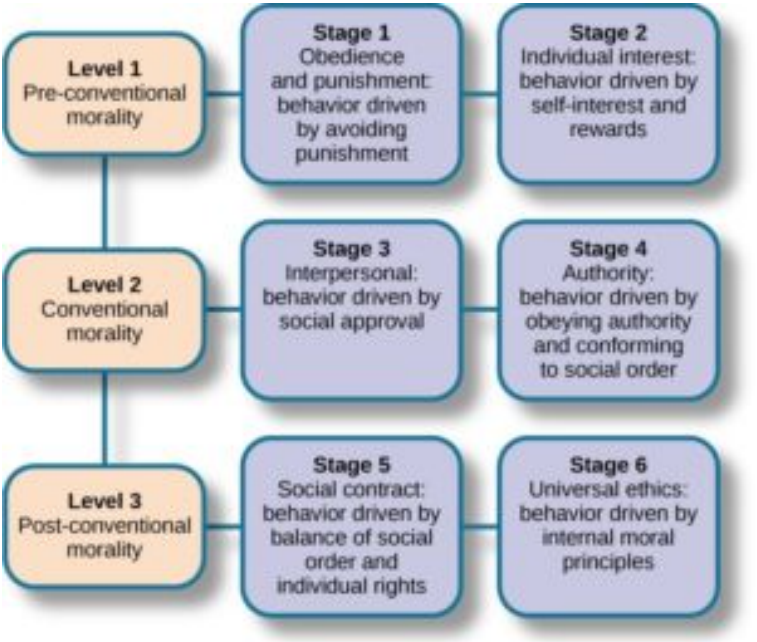


Figure 1. Kohlberg identified three levels of moral reasoning: pre-conventional, conventional, and post-conventional: Each level is associated with increasingly complex stages of moral development.

Preconventional: Obedience and Mutual Advantage

The preconventional level of moral development coincides approximately with the preschool period of life and with Piaget's preoperational period of thinking. At this age, the child is still relatively self-centered and insensitive to the moral effects of actions on others. The result is a somewhat short-sighted orientation to morality. Initially (Kohlberg's Stage 1), the child

adopts **ethics of obedience and punishment**—a sort of "morality of keeping out of trouble." The rightness and wrongness of actions are determined by whether actions are rewarded or punished by authorities, such as parents or teachers. If helping yourself to a cookie brings affectionate smiles from adults, then taking the cookie is considered morally "good." If it brings scolding instead, then it is morally "bad." The child does not think about why an action might be praised or scolded; in fact, says Kohlberg, he would be incapable, at Stage 1, of considering the reasons even if adults offered them.

Eventually, the child learns not only to respond to positive consequences but also learns how to **produce** them by exchanging favors with others. The new ability creates Stage 2, **ethics of market exchange**. At this stage, the morally "good" action is one that favors not only the child but another person directly involved. A "bad" action is one that lacks this reciprocity. If trading the sandwich from your lunch for the cookies in your friend's lunch is mutually agreeable, then the trade is morally good; otherwise, it is not. This perspective introduces a type of fairness into the child's thinking for the first time. However, it still ignores the larger context of actions—the effects on people not present or directly involved. In Stage 2, for example, it would also be considered morally "good" to pay a classmate to do another student's homework—or even to avoid bullying—provided that both parties regard the arrangement as being fair.

Conventional: Conformity to Peers and Society

As children move into the school years, their lives expand to include a larger number and range of peers and (eventually) of the community as a whole. The change leads to **conventional morality**, which are beliefs based on what this larger array of people agree on—hence Kohlberg's use of the term "conventional." At first, in Stage 3, the child's reference group are immediate peers, so Stage

3 is sometimes called the **ethics of peer opinion**. If peers believe, for example, that it is morally good to behave politely with as many people as possible, then the child is likely to agree with the group and to regard politeness as not merely an arbitrary social convention, but a moral "good." This approach to moral belief is a bit more stable than the approach in Stage 2 because the child is taking into account the reactions not just of one other person, but of many. But it can still lead astray if the group settles on beliefs that adults consider morally wrong, like "Shoplifting for candy bars is fun and desirable."

Eventually, as the child becomes a youth and the social world expands, even more, he or she acquires even larger numbers of peers and friends. He or she is, therefore, more likely to encounter disagreements about ethical issues and beliefs. Resolving the complexities lead to Stage 4, the **ethics of law and order**, in which the young person increasingly frames moral beliefs in terms of what the majority of society believes. Now, an action is morally good if it is legal or at least customarily approved by most people, including people whom the youth does not know personally. This attitude leads to an even more stable set of principles than in the previous stage, though it is still not immune from ethical mistakes. A community or society may agree, for example, that people of a certain race should be treated with deliberate disrespect, or that a factory owner is entitled to dump wastewater into a commonly shared lake or river. To develop ethical principles that reliably avoid mistakes like these require further stages of moral development.

Postconventional: Social Contract and Universal Principles

As a person becomes able to think abstractly (or "formally," in Piaget's sense), ethical beliefs shift from acceptance of what the community **does** believe to the **process** by which community beliefs

are formed. The new focus constitutes Stage 5, the **ethics of social contract**. Now an action, belief, or practice is morally good if it has been created through fair, democratic processes that respect the rights of the people affected. Consider, for example, the laws in some areas that require motorcyclists to wear helmets. In what sense are the laws about this behavior ethical? Was it created by consulting with and gaining the consent of the relevant people? Were cyclists consulted, and did they give consent? Or how about doctors or the cyclists' families? Reasonable, thoughtful individuals disagree about how thoroughly and fairly these **consultation** processes should be. In focusing on the processes by which the law was created; however, individuals are thinking according to Stage 5, the ethics of social contract, regardless of the position they take about wearing helmets. In this sense, beliefs on both sides of a debate about an issue can sometimes be morally sound, even if they contradict each other.

Paying attention to due process certainly seems like it should help to avoid mindless conformity to conventional moral beliefs. As an ethical strategy, though, it too can sometimes fail. The problem is that an ethics of social contract places more faith in the democratic process than the process sometimes deserves, and does not pay enough attention to the content of what gets decided. In principle (and occasionally in practice), a society could decide democratically to kill off every member of a racial minority, but would deciding this by due process make it ethical? The realization that ethical means can sometimes serve unethical ends leads some individuals toward Stage 6, the **ethics of self-chosen, universal principles**. At this final stage, the morally good action is based on personally held principles that apply both to the person's immediate life as well as to the larger community and society. The universal principles may include a belief in democratic due process (Stage 5 ethics), but also other principles, such as a belief in the dignity of all human life or the sacredness of the natural environment. At Stage 6, the universal principles will guide a person's beliefs even if the principles mean

occasionally disagreeing with what is customary (Stage 4) or even with what is legal (Stage 5).



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Video 1. *Kohlberg's Six Stages of Moral Development* explains the stages of moral reasoning and applies it to an example scenario.



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Kohlberg and the Heinz Dilemma

The Heinz dilemma is a frequently used example to help us understand Kohlberg's stages of moral development. How would you answer this dilemma? Kohlberg was not interested in whether you answer yes or no to the dilemma: Instead, he was interested in the reasoning behind your answer.

In Europe, a woman was near death from a special kind of cancer. There was one drug that the doctors thought might save her. It was

a form of radium that a druggist in the same town had recently discovered. The drug was expensive to make, but the druggist was charging ten times what the drug cost him to make. He paid $200 for the radium and charged $2,000 for a small dose of the drug. The sick woman's husband, Heinz, went to everyone he knew to borrow the money, but he could only get together about $1,000, which is half of what it cost. He told the druggist that his wife was dying and asked him to sell it cheaper or let him pay later. But the druggist said: "No, *I discovered the drug and I'm going to make money from it.*" *So Heinz got desperate and broke into the man's store to steal the drug for his wife. Should the husband have done that? (Kohlberg, 1969, p. 379)*

From a theoretical point of view, it is not important what the participant thinks that Heinz should do. Kohlberg's theory holds that the justification the participant offers is what is significant, the form of their response. Below are some of many examples of possible arguments that belong to the six stages:

- Stage one (obedience): Heinz should not steal the medicine because he will consequently be put in prison, which will mean he is a bad person. OR Heinz should steal the medicine because it is only worth $200 and not how much the druggist wanted for it; Heinz had even offered to pay for it and was not stealing anything else.
- Stage two (self-interest): Heinz should steal the medicine because he will be much happier if he saves his wife, even if he will have to serve a prison sentence. OR Heinz should not steal the medicine because prison is an awful place, and he would more likely languish in a jail cell than over his wife's death.
- Stage three (conformity): Heinz should steal the medicine because his wife expects it; he wants to be a good husband. OR Heinz should not steal the drug because stealing is bad, and he is not a criminal; he has tried to do everything he can without breaking the law, you cannot blame him.
- Stage four (law-and-order): Heinz should not steal the medicine because the law prohibits stealing, making it illegal.

OR Heinz should steal the drug for his wife but also take the prescribed punishment for the crime as well as paying the druggist what he is owed. Criminals cannot just run around without regard for the law; actions have consequences.

- Stage five (social contract orientation): Heinz should steal the medicine because everyone has a right to choose life, regardless of the law. OR Heinz should not steal the medicine because the scientist has a right to fair compensation. Even if his wife is sick, it does not make his actions right.
- Stage six (universal human ethics): Heinz should steal the medicine because saving a human life is a more fundamental value than the property rights of another person. OR Heinz should not steal the medicine because others may need medicine just as badly, and their lives are equally significant.

Think It Over

Consider your decision-making processes. What guides your decisions? Are you primarily concerned with your personal well-being? Do you make choices based on what other people will think about your decision? Or are you guided by other principles? To what extent is this approach guided by your culture?

Kohlberg continued to explore his theory after he published his research. He postulated that there could be other stages and that there could be transitions into each stage. One thing that Kohlberg never fully addressed was his use of nearly all-male samples. Men and women tend to have very different styles of moral decision-making; men tend to be very justice-oriented, while women tend to be more compassion-oriented. In terms of Kohlberg's stages,

women tend to be in lower stages than men because of their compassion orientation.

Carol Gilligan was one of Kohlberg's research assistants. She believed that Kohlberg's theory was inherently biased against women. Gilligan suggests that the biggest reason that there is a gender bias in Kohlberg's theory is that males tend to focus on logic and rules. In contrast, women focus on caring for others and relationships. She suggests, then, that in order to truly measure women's moral development, it was necessary to create a measure specifically for women. Gilligan was clear that she did not believe neither male nor female moral development was better, but rather that they were equally important.

Gilligan's Morality of Care

As logical as they sound, Kohlberg's stages of moral justice are not sufficient for understanding the development of moral beliefs. To see why, suppose that you have a student who asks for an extension of the deadline for an assignment. The justice orientation of Kohlberg's theory would prompt you to consider issues of whether granting the request is fair. Would the late student be able to put more effort into the assignment than other students? Would the extension place a difficult demand on you, since you would have less time to mark the assignments? These are important considerations related to the rights of the students and the teacher. In addition to these, however, are considerations having to do with the responsibilities that you and the requesting student have for each other and others. Does the student have a valid personal reason (illness, death in the family, etc.) for the assignment being late? Will the assignment lose its educational value if the student has to turn it in prematurely? These latter questions have less to do with fairness and rights and more to do with taking care of and responsibility for

students. They require a framework different from Kohlberg's to be understood fully.

One such framework has been developed by Carol Gilligan, whose ideas center on **morality of care**, or system of beliefs about human responsibilities, care, and consideration for others. Gilligan proposed three moral positions that represent different extents or breadth of ethical care. Unlike Kohlberg or Piaget, she does not claim that the positions form a strictly developmental sequence, but only that they can be ranked hierarchically according to their depth or subtlety. In this respect, her theory is "semi-developmental" in a way similar to Maslow's theory of motivation (Brown & Gilligan, 1992; Taylor, Gilligan, & Sullivan, 1995). Table 9.1 summarizes the three moral positions from Gilligan's theory.

Table 1. Positions of moral development according to Gilligan

Moral position	Definition of what is morally good
Position 1: Survival orientation	Action that considers one's personal needs only
Position 2: Conventional care	Action that considers others' needs or preferences, but not one's own
Position 3: Integrated care	Action that attempts to coordinate one's own personal needs with those of others

Position 1: Caring as Survival

The most basic kind of caring is a **survival orientation**, in which a person is concerned primarily with his or her welfare. If a teenage girl with this ethical position is wondering whether to get an abortion, for example, she will be concerned entirely with the effects of the abortion on herself. The morally good choice will be whatever creates the least stress for herself, and that disrupts her own life the least. Responsibilities to others (the baby, the father, or her family) play little or no part in her thinking.

As a moral position, a survival orientation is obviously not satisfactory for classrooms on a widespread scale. If every student only looked out for himself or herself, classroom life might become rather unpleasant! Nonetheless, there are situations in which focusing primarily on yourself is both a sign of good mental health and relevant to teachers. For a child who has been bullied at school or sexually abused at home, for example, it is both healthy and morally desirable to speak out about how bullying or abuse has affected the victim. Doing so means essentially looking out for the victim's own needs at the expense of others' needs, including the bully's or abuser's. Speaking out, in this case, requires a survival orientation and is healthy because the child is taking care of herself.

Position 2: Conventional Caring

A more subtle moral position is **caring for others**, in which a person is concerned about others' happiness and welfare, and about reconciling or integrating others' needs where they conflict with each other. In considering an abortion, for example, the teenager at this position would think primarily about what other people prefer. Do the father, her parents, and/or her doctor want her to keep the child? The morally good choice becomes whatever will please others the best. This position is more demanding than Position 1, ethically, and intellectually, because it requires coordinating several persons' needs and values. Nevertheless, it is often morally insufficient because it ignores one crucial person: the self.

In classrooms, students who operate from Position 2 can be very desirable in some ways; they can be eager to please, considerate, and good at fitting in and at working cooperatively with others. Because these qualities are usually welcome in a busy classroom, teachers can be tempted to reward students for developing and using them. The problem with rewarding Position 2 ethics, however, is that doing so neglects the student's development—his or her own

academic and personal goals or values. Sooner or later, personal goals, values, and identity need attention and care, and educators have a responsibility for assisting students in discovering and clarifying them.

Position 3: Integrated Caring

The most developed form of moral caring in Gilligan's model is **integrated caring**, the coordination of personal needs and values with those of others. Now the morally good choice takes account of everyone, *including* yourself, not everyone *except* yourself. In considering an abortion, a woman at Position 3 would think not only about the consequences for the father, the unborn child, and her family but also about the consequences for herself. How would bearing a child affect her own needs, values, and plans? This perspective leads to moral beliefs that are more comprehensive but ironically are also more prone to dilemmas because the widest possible range of individuals is being considered.

In classrooms, integrated caring is most likely to surface whenever teachers give students wide, sustained freedom to make choices. If students have little flexibility in their actions, there is little room for considering *anyone*'s needs or values, whether their own or others'. If the teacher says simply: "Do the homework on page 50 and turn it in tomorrow morning," then the main issue becomes compliance, not a moral choice. Suppose instead that she says something like this: "Over the next two months, figure out an inquiry project about the use of water resources in our town. Organize it any way you want—talk to people, read widely about it, and share it with the class in a way that all of us, including yourself, will find meaningful." An assignment like this poses moral challenges that are not only educational but also moral since it requires students to make value judgments. Why? For one thing, students must decide what aspect of the topic matters to them.

Such a decision is partly a matter of personal values. For another thing, students have to consider how to make the topic meaningful or important to *others* in the class. Third, because the timeline for completion is relatively far in the future, students may have to weigh personal priorities (like spending time with friends or family) against educational priorities (working on the assignment a bit more on the weekend). As you might suspect, some students might have trouble making good choices when given this sort of freedom—and their teachers might, therefore, be cautious about giving such an assignment. Nevertheless, the difficulties in making choices are part of Gilligan's point: integrated caring is indeed more demanding than caring based only on survival or on consideration of others. Not all students may be ready for it.



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Video 2. *Carol Gilligan's Theory of Moral Development* explains the difference in moral development from the care perspective that females often take in society.



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The Development of Moral Reasoning

The Foundations of Moral Reasoning in Infancy



The work of Lawrence Kohlberg was an important start to modern research on moral development and reasoning. However, Kohlberg relied on a specific method: he presented moral dilemmas and asked children and adults to explain what they would do and—more importantly—why they would act in that particular way. Kohlberg found that children tended to make choices based on avoiding punishment and gaining praise. But children are at a disadvantage compared to adults when they must rely on language to convey their inner thoughts and emotional reactions, so what they say may not adequately capture the complexity of their thinking.

Starting in the 1980s, developmental psychologists created new methods for studying the thought processes of children and infants long before they acquire language. One particularly effective method is to present children with puppet shows to grab their attention and then record nonverbal behaviors, such as looking and choosing, to identify children's preferences or interests.

A research group at Yale University has been using the puppet show technique to study the moral thinking of children for much of the past decade. What they have discovered has given us a glimpse of surprisingly complex thought processes that may serve as the foundation of moral reasoning.

EXPERIMENT 1: Do children prefer givers or takers?

In 2011, J. Kiley Hamlin and Karen Wynn put on puppet shows for very young children: 5-month-old infants. The infants watch a puppet bouncing a ball. We'll call this puppet the "bouncer puppet." Two other puppets stand at the back of the stage, one to left and the other to the right. After a few bounces, the ball gets away from the bouncer puppet and rolls to the side of the stage toward one of the other puppets. This puppet grabs the ball. The bouncer puppet turns toward the ball and opens its arms as if asking for the ball back.

This is where the puppet show gets interesting (for a young infant, anyway!). Sometimes, the puppet with the ball rolls it back to the bouncer puppet. This is the "giver puppet" condition. Other times, the infant sees a different ending. As the bouncer puppet opens its arms to ask for the ball, the puppet with the ball turns and runs away with it. This is the "taker puppet" condition. Although the giver and taker puppets are two copies of the same animal doll, they are easily distinguished because they are wearing different colored shirts, and color is a quality that infants easily distinguish and remember. It looks like this:



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Video 3. *Experiment 1 Demonstration.*

Each infant sees both conditions: the giver condition and the

taker condition. Just after the end of the second puppet show (i.e., the second condition), a new researcher, who doesn't know which puppet was the giver and which was the taker, sits in front of the infant with the giver puppet in one hand and the taker puppet in the other. The 5-month-old infants are allowed to reach for a puppet. The one the child reaches out to touch is considered the preferred puppet. The children preferred the giver puppet.

But this isn't the end of the story…

EXPERIMENT 2: Do infants judge others based on their behavior?

Dr. Hamlin and her colleagues wondered if infants might consider more factors than nice or hurtful when making a judgment. Adults generally prefer situations where good things happen to someone rather than something harmful. However, when adults see someone do something bad, they may find satisfaction in seeing that person punished by having something bad happen to him or her. In a nutshell: good things should happen to good people and bad things should happen to bad people. This is what is called "just world" thinking, where people get what they deserve.

In th\is second study, Hamlin's team tested 8-month-old infants and repeated the procedures from Experiment 1 with a major addition. First, they saw the bouncer puppet either helping or hindering another puppet–setting the conditions for the bouncer puppet to be seen as good or bad. Then, they watched the same ball-bouncing puppet show. Here is what happened:

- Puppet Show #1: A puppet is trying to open a box, but cannot quite succeed. Two puppets stand in the background. For some infants, as the first puppet struggles to open the box, one of the puppets in the back comes forward and helps to open the box. This is the helper puppet. For other children, as the first

puppet struggles, a puppet comes from the back and jumps on the box, slamming it shut. This is the hinderer puppet. Each infant sees only a helper or a hinderer—not both. Here is a video showing the helper puppet situation:



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Video 4. *Experiment 2 Demonstration.*

- Puppet Show #2: Just after the infants have watched the first show, the second puppet show begins. This is the show that you read about in Experiment 1. The only thing that is new is that the bouncer puppet, the one that loses the ball, is either the helper puppet from Puppet Show #1 or the hinderer puppet from Puppet Show #1. Each infant sees this puppet lose the ball to a giver, who returns the ball, and to a taker, who runs off with the ball.

This video demonstrates show #2. The elephant in the yellow shirt from the first show is now bouncing a ball. After dropping the ball, the moose in the green shirt gives it back to him, while the moose in the red shirt takes it away.



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here:
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Video 5. *Experiment 2 Demonstration.*



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Video 6. *Experiment 2 Demonstration.*



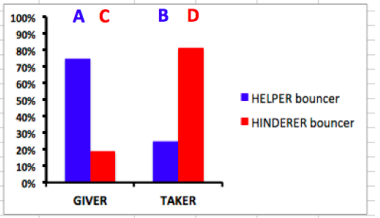
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So far we have concluded that even young babies prefer the "nice" puppet and show a preference for a puppet who helps another puppet. But this only happened when the bouncer puppet was the helper from the first puppet show. What if, instead of the nice elephant in the yellow shirt bouncing the ball, the elephant in the red shirt (the one who jumped on the duck's box, remember?)

was the one bouncing the ball? Imagine the same scenario: the mean elephant in the red shirt is bouncing the ball, he drops it, and the moose in the green shirt gives it to him or the moose in the red shirt takes it away.

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So now things are getting interesting, right? Do 8-month old infants understand the concepts of revenge or justice? We must always be careful when labeling behaviors of children (or animals) with characteristics we use for human adults. In the description above, we have talked of "nice puppets" and "mean puppets" and used other loaded terms. It is tempting to interpret the choices of the 8-month-olds as a kind of revenge motive: the bad guy gets its just desserts (the hinderer puppet has its ball stolen) and the good guy gets its just reward (the helper puppet is itself helped by the giver). Maybe that is what is going on, but we encourage you to consider



	GIVER	TAKER	TOTAL
HELPER bouncer	75%	25%	100%
HINDERER bouncer	19%	81%	100%

Figure 2. *This bar graph shows the results of Experiment 2 for 8-month-old infants. The blue bars show the preferences for the infants who saw the helper from the first show as the bouncer in the second. Bar A is taller than Bar B, showing the greater choice of the giver than the taker puppet. The red bars show the reverse effect. The babies strongly preferred the taker (Bar C) to the giver (Bar D) when the puppet bouncing the ball had been the hinderer, who jumped on the box in the first show.*

these very sophisticated types of thinking as merely one hypothesis. Remember the facts—what did the puppets do and what choices did the infants make?—without committing yourself to the adult-level interpretation.

The researchers believe that this type of thinking, which is remarkably sophisticated, takes some cognitive development. They tested 5-month-olds using the same procedures, and the results with these younger infants were different. The 5-month-olds showed an overwhelming preference for the giver puppets, regardless of who was bouncing the ball. Maybe it is too complex for them to understand that the bouncer puppet in the second show was the same puppet from the first show. Or perhaps their memory processes are too fragile to hold onto information for that length of time. Maybe the revenge motive is too advanced. Or maybe something else is going on. What is clear is that 5-month-olds and 8-month-olds respond differently to the situations tested in the second experiment.

CONCLUSIONS

This exercise started with a reminder that Lawrence Kohlberg found that children went through a long developmental process in their moral reasoning. Based on children's reasoning aloud about moral dilemmas, Kohlberg concluded that children younger than about 8 or 9 years of age make moral decisions based on avoiding punishment and receiving praise. Neither his research nor that of most others in the 1970s and 1980s suggested that young children would use multiple sources of information and judgments about the meaning of behaviors in their thinking about what sorts of behaviors are better or worse.

If Dr. Hamlin and her colleagues are right, then infants are much more sophisticated and complex in their thinking about the world than these earlier researchers thought. In Dr. Hamlin's view, infants

like good things to happen to good puppets and people, and bad things to happen to bad puppets and people. Experiment 3 suggests that they make judgments about more than helping and harming behavior. They prefer others who are like them (green beans vs. graham crackers) and they don't mind if others who are not like them have unpleasant experiences.

The research we have been reviewing is just part of an impressive set of research on infant thinking. The ideas that the researchers have developed are intriguing and they are consistent with the modern view of the infant as an active, creative thinker. At the same time, remember that science doesn't rest on an early set of explanations based on a small set of complicated experiments. Science pushes beyond what we currently know and believe. This starts with curiosity on your part. Are the experimenters correct in interpreting reaching behavior as showing a preference or is something else going on? Do infants really prefer prosocial behaviors to antisocial behaviors, or is there some other explanation for their preferences? How else could we test the moral judgments of infants without using puppet shows? The next generation of creative scientists will push beyond what we know now, with new research methods and new ideas about the mind.

We'll give Dr. Hamlin the last word. Here is part of her conclusion section from an article that summarizes some of the research we have been studying: "In sum, recent developmental research supports the claim that at least some aspects of human morality are innate…Indeed, these early tendencies are far from shallow, mechanical predispositions to behave well or knee-jerk reactions to particular states of the world. Infant moral inclinations are sophisticated, flexible, and surprisingly consistent with adults' moral inclinations, incorporating aspects of moral goodness, evaluation, and retaliation." (Hamlin, 2013, p. 191)

Moral Reasoning in Childhood

Conscience consists of the cognitive, emotional, and social influences that cause young children to create and act consistently with internal standards of conduct (Kochanska, 2002). It emerges from young children's experiences with parents, particularly in the development of a mutually responsive relationship that motivates young children to respond constructively to the parents' requests and expectations. Biologically based temperament is involved, as some children are temperamentally more capable of motivated self-regulation (a quality called effortful control) than are others, while some children are more prone to the fear and anxiety that parental disapproval can evoke. The development of conscience is influenced by having a good fit between the child's temperamental qualities and how parents communicate and reinforce behavioral expectations.

Conscience development also expands as young children begin to represent moral values and think of themselves as moral beings. By the end of the preschool years, for example, young children develop a "moral self" by which they think of themselves as people who want to do the right thing, who feel badly after misbehaving, and who feel uncomfortable when others misbehave. In the development of conscience, young children become more socially and emotionally competent in a manner that provides a foundation for later moral conduct (Thompson, 2012).

Moral Reasoning in Adolescence

As adolescents become increasingly independent, they also develop more nuanced thinking about morality, or what is right or wrong. As adolescents' cognitive, emotional, and social development continue to mature, their understanding of morality expands, and their

behavior becomes more closely aligned with their values and beliefs. Therefore, moral development describes the evolution of these guiding principles and is demonstrated by the ability to apply these guidelines in daily life. Understanding moral development is important in this stage, where individuals make so many important decisions and gain more and more legal responsibility.

Adolescents are receptive to their culture, to the models they see at home, in school, and in the mass media. These observations influence moral reasoning and moral behavior. When children are younger, their family, culture, and religion greatly influence their moral decision-making. During the early adolescent period, peers have a much greater influence. Peer pressure can exert a powerful influence because friends play a more significant role in teens' lives.

Furthermore, the new ability to think abstractly enables youth to recognize that rules are simply created by other people. As a result, teens begin to question the absolute authority of parents, schools, government, and other traditional institutions (Vera-Estay, Dooley, & Beauchamp, 2014). By late adolescence, most teens are less rebellious as they have begun to establish their own identity, their own belief system, and their place in the world.

Unfortunately, some adolescents have life experiences that may interfere with their moral development. Traumatic experiences may cause them to view the world as unjust and unfair. Additionally, social learning also impacts moral development. Adolescents may have observed the adults in their lives, making immoral decisions that disregarded the rights and welfare of others, leading these youth to develop beliefs and values that are contrary to the rest of society. That being said, adults have opportunities to support moral development by modeling the moral character that we want to see in our children. Parents are particularly important because they are generally the original source of moral guidance. Authoritative parenting facilitates children's moral growth better than other parenting styles, and one of the most influential things a parent can do is to encourage the right kind of peer relations (McDevitt & Ormrod, 2004). While parents may find this process of moral

development difficult or challenging, it is important to remember that this developmental step is essential to their children's well-being and ultimate success in life.

As mentioned previously, Lawrence Kohlberg (1984) argued that moral development moves through a series of stages, and reasoning about morality becomes increasingly complex (somewhat in line with increasing cognitive skills, as per Piaget's stages of cognitive development). In early adolescence, young people begin to care about how situational outcomes impact others and want to please and be accepted (conventional morality). At this developmental phase, people are able to value the good that can be derived from holding to social norms in the form of laws or less formalized rules. From adolescence and beyond, adolescents begin to employ abstract reasoning to justify behaviors. Moral behavior is based on self-chosen ethical principles that are generally comprehensive and universal, such as justice, dignity, and equality, which is postconventional morality.

Influences on Moral Development

Like most aspects of development, influencing factors are multifaceted. Moral development is strongly influenced by interpersonal factors, such as family, peers, and culture. Intrapersonal factors also impact moral development, such as cognitive changes, emotions, and even neurodevelopment.

Interpersonal Influences

Children's interactions with caregivers and peers have been shown to influence their development of moral understanding and behavior. Researchers have addressed the influence of interpersonal

interactions on children's moral development from two primary perspectives: socialization/internalization (Grusec & Goodnow, 1994; Kochanska & Askan, 1995; Kochanska, Askan, & Koenig, 1995) and social domain theory (Turiel, 1983; Smetana 2006). Research from the social domain theory perspective focuses on how children actively distinguish moral from conventional behavior based in part based on the responses of parents, teachers, and peers (Smetana, 1997). Adults tend to respond to children's moral transgressions (e.g., hitting or stealing) by drawing the child's attention to the effect of his or her action on others and doing so consistently across various contexts.

In contrast, adults are more likely to respond to children's conventional misdeeds (e.g., wearing a hat in the classroom, eating spaghetti with fingers) by reminding children about specific rules and doing so only in certain contexts (e.g., at school but not at home) (Smetana, 1984; 1985). Peers respond mainly to moral but not conventional transgressions and demonstrate emotional distress (e.g., crying or yelling) when they are the victim of moral but not conventional transgressions (Smetana, 1984). Children then use these different cues to help determine whether behaviors are morally or conventionally wrong.

Research from a socialization/internalization perspective focuses on how adults pass down standards of behavior to children through parenting techniques and why children do or do not internalize those values (Grusec & Goodnow, 1994; Kochanska & Askan, 1995). From this perspective, moral development involves children's increasing compliance with and internalization of adult rules, requests, and standards of behavior. Using these definitions, researchers find that parenting behaviors vary in the extent to which they encourage children's internalization of values and that these effects depend partially on child attributes, such as age and temperament (Grusec & Goodnow, 1994). For instance, Kochanska (1997) showed that gentle parental discipline best promotes conscience development in temperamentally fearful children. However, the same parental responsiveness and a mutually

responsive parent-child orientation best promote conscience development in temperamentally fearless children. These parental influences exert their effects through multiple pathways, including increasing children's experience of moral emotions (e.g., guilt, empathy) and their self-identification as moral individuals (Kochanska, 2010).

Moral Development in the Family

In the formation of children's morals, no outside influence is greater than that of the family. Through punishment, reinforcement, and both direct and indirect teaching, families instill morals in children and help them to develop beliefs that reflect the values of their culture. Although families' contributions to children's moral development are broad, there are particular ways in which morals are most effectively conveyed and learned.

Justice

Families establish rules for right and wrong behavior, which are maintained through positive reinforcement and punishment. Positive reinforcement is the reward for good behavior and helps children learn that certain actions are encouraged above others. Punishment, by contrast, helps to deter children from engaging in bad behaviors, and from an early age helps children to understand that actions have consequences. This system additionally helps children to make decisions about how to act, as they begin to consider the outcomes of their behavior.

Fairness

The notion of what is fair is one of the central moral lessons that children learn in the family context. Families set boundaries on the distribution of resources, such as food and living spaces, and allow members different privileges based on age, gender, and employment. The way in which a family determines what is fair affects children's development of ideas about rights and entitlements, and also influences their notions of sharing, reciprocity, and respect.

Personal Balance

Through understanding principles of fairness, justice, and social responsibilities, children learn to find a balance between their own needs and wants and the interests of the greater social environment. By placing limits on their desires, children benefit from a greater sense of love, security, and shared identity. At the same time, this connectedness helps children to refine their own moral system by providing them with a reference for understanding right and wrong.

Social Roles

In the family environment, children come to consider their actions not only in terms of justice but also in terms of emotional needs. Children learn the value of social support from their families and develop motivations based on kindness, generosity, and empathy, rather than on only personal needs and desires. By learning to care for the interests and well-being of their family, children develop concern for society as a whole.

Morality and Culture

The role of culture on moral development is an important topic that raises fundamental questions about what is universal and what is culturally specific regarding morality and moral development. Many research traditions have examined this question, with social-cognitive and structural-developmental positions theorizing that morality has a universal requirement to it, drawing from moral philosophy. The expectation is that if morality exists, it has to do with those values that are generalizable across groups and cultures. Alternatively, relativistic cultural positions have been put forth mostly by socialization theories that focus on how cultures transmit values rather than what values are applied across groups and individuals.

As an example of some of the debates, Shweder, Mahapatra, and Miller (1987) argued for moral relativism or the notion that different cultures defined the boundaries of morality differently. In contrast, Turiel and Perkins (2004) argued for the universality of morality, focusing largely on evidence throughout the history of resistance movements that fight for justice through the affirmation of individual self-determination rights. In an update on the debate between moral relativism and moral universality, Miller (2006) provides a thoughtful review of the cultural variability of moral priorities. Miller argues that rather than variability in what individuals consider moral (fairness, justice, rights), there is cultural variability in the priority given to moral considerations (e.g., the importance of prosocial helping). Wainryb (2006), in contrast, reviews extensive literature that has demonstrated that children in diverse cultures such as the U.S., India, China, Turkey, and Brazil share a pervasive view about upholding fairness and the wrongfulness of inflicting harm on others. Cultures vary in terms of conventions and customs, but not principles of fairness, which appear to emerge very early in development, before socialization influences. Wainryb (1991; 1993) shows that many apparent cultural

differences in moral judgments are actually due to different informational assumptions or beliefs about the way the world works. When people hold different beliefs about the effects of actions or the status of different groups of people, their judgments about the harmfulness or fairness of behaviors often differ, even when they are applying the same moral principles.

Another powerful socializing mechanism by which values are transmitted is religion, which is for many inextricably linked to cultural identity. Nucci and Turiel (1993) assessed individuals' reactions to dictates from God, and the distinctions in their reactions to God's moral (e.g., stealing) and conventional (e.g., day of worship) dictates. One explicit manner in which societies can socialize individuals is through moral education. Solomon and colleagues (1988) present evidence from a study that integrated both direct instruction and guided reflection approaches to moral development, with evidence for resultant increases in spontaneous prosocial behavior. Finally, studies of moral development and cultural issues cover many subtopics. For instance, a recent review of studies examining social exclusion identifies cultural similarities in the evaluation of exclusion across a range of societies and cultures (Hitti, Mulvey & Killen, 2011).

Intrapersonal Influences

Moral questions tend to be emotionally charged issues that evoke strong affective responses. Consequently, emotions likely play an important role in moral development. However, there is currently little consensus among theorists on how emotions influence moral development. Psychoanalytic theory, founded by Freud, emphasizes the role of guilt in repressing primal drives. Research on prosocial behavior has focused on how emotions motivate individuals to engage in moral or altruistic acts. Social-cognitive development theories have recently begun to examine how emotions influence

moral judgments. Intuitionist theorists assert that moral judgments can be reduced to immediate, instinctive emotional responses elicited by moral dilemmas.

Research on socioemotional development and prosocial development has identified several "moral emotions," which are believed to motivate moral behavior and influence moral development (Eisenberg, 2000, for a review). The primary emotions consistently linked with moral development are guilt, shame, empathy, and sympathy. Guilt has been defined as "an agitation-based emotion or painful feeling of regret that is aroused when the actor causes, anticipates causing or is associated with an aversive event" (Fergusen & Stegge, 1998). Shame is often used synonymously with guilt but implies a more passive and dejected response to a perceived wrong. Guilt and shame are considered "self-conscious" emotions because they are of primary importance to an individual's self-evaluation.

In contrast to guilt and shame, empathy and sympathy are considered other-oriented moral emotions. Empathy is commonly defined as an affective response produced by the apprehension or comprehension of another's emotional state, which mirrors the other's affective state. Similarly, sympathy is defined as an emotional response produced by the apprehension or comprehension of another's emotional state, which does not mirror the other's affect but instead causes one to express concern or sorrow for the other (Eisenberg, 2000).

The relation between moral action and moral emotions has been extensively researched. Very young children have been found to express feelings of care, and empathy towards others, showing concerns for other's well-being (Eisenberg, Spinard, & Sadovsky, 2006). Research has consistently demonstrated that when empathy is induced in an individual, he or she is more likely to engage in subsequent prosocial behavior (Batson 1998; Eisenberg, 200 for review). Additionally, other research has examined emotions of shame and guilt concerning children's emphatic and prosocial behavior (Zahn-Waxler & Robinson, 1995).

While emotions serve as information for children in their interpretations about the moral consequences of acts, the role of emotions in children's moral judgments has only recently been investigated. Some approaches to studying emotions in moral judgments come from the perspective that emotions are automatic intuitions that define morality (Greene, 2001; Haidt, 2001). Other approaches emphasize the role of emotions as evaluative feedback that help children interpret acts and consequences (Turiel & Killen, 2010). Research has shown that children attribute different emotional outcomes to actors involved in moral transgressions than those involved in conventional transgressions (Arsenio, 1988; Arsenio & Fleiss, 1996). Emotions may help individuals prioritize among different information and possibilities and reduce information processing demands in order to narrow the scope of the reasoning process (Lemerise & Arsenio, 2000). In addition, Malti, Gummerum, Keller, and Buchmann (2009), found individual differences in how children attribute emotions to victims and victimizers.

Forming a Sense of Rights and Responsibilities

When it comes to schooling and teaching, moral choices are not restricted to occasional dramatic incidents but are woven into almost every aspect of classroom life. Imagine this simple example. Suppose that you are teaching, reading to a small group of second-graders, and the students are taking turns reading a story out loud. Should you give every student the same amount of time to read, even though some might benefit from having additional time? Or should you give more time to the students who need extra help, even if doing so bores classmates and deprives others of equal shares of "floor time"? Which option is fairer, and which is more considerate? Simple dilemmas like this happen every day at all grade levels simply because students are diverse, and because class time and a teacher's energy are finite.

Embedded in this rather ordinary example are moral themes about fairness or justice, on the one hand, and about consideration or care on the other. It is important to keep both themes in mind

when thinking about how students develop beliefs about right or wrong. A **morality of justice** is about human rights—or, more specifically, about respect for fairness, impartiality, equality, and individuals' independence. A **morality of care**, on the other hand, is about human responsibilities—more specifically, about caring for others, showing consideration for individuals' needs, and interdependence among individuals. Students and teachers need both forms of morality. In the next sections, therefore, we explain a major example of each type of developmental theory, beginning with the morality of justice.

Character Development: Integrating Ethical Understanding, Care, and Action

The theories described so far all offer frameworks for understanding how children grow into youth and adults. Those by Maslow, Kohlberg, and Gilligan are more specific than the one by Erikson in that they focus on the development of understanding about ethics. From a teacher's point of view, though, the theories are all limited in two ways. One problem is that they focus primarily on cognition—on what children *think* about ethical issues—more than on emotions and actions. The other is that they say little about how to encourage ethical development. Encouragement is part of teachers' jobs, and doing it well requires understanding not only what students know about ethics, but also how they feel about it and what ethical actions they are prepared to take.

Many educators have recognized the need for children to be guided in the development of ethics and morals, and a number of them have, therefore, developed practical programs that integrate ethical understanding, care, and action. As a group, the programs are often called **character education**. However, individual programs have a variety of specific names (for example, moral dilemma education, integrative ethical education, social competence

education, and many more). Details of the programs vary, but they all combine a focus on ethical knowledge with attention to ethical feelings and actions (Elkind & Sweet, 2004; Berkowitz & Bier, 2006; Narvaez, 2010). Character education programs go well beyond just teaching students to obey ethical rules, such as "Always tell the whole truth" or "Always do what the teacher tells you to do." Such rules require very little thinking on the part of the student, and there are usually occasions in which a rule that is supposedly universal needs to be modified, "bent," or even disobeyed. (For example, if telling the whole truth might hurt someone's feelings, it might sometimes be more considerate—and thus more ethical—to soften the truth a bit, or even to say nothing at all.)

Instead, character education is about inviting students to think about the broad questions of his or her life, such as "What kind of person should I be?" or "How should I live my life?" Thoughtful answers to such broad questions help to answer a host of more specific questions that have ethical implications. For example, "Should I listen to the teacher right now, even if she is a bit boring, or just tune out?" or "Should I offer to help my friend with the homework she is struggling with, or hold back, so that learns to do it herself?" Most of the time, there is not enough time to reason about questions like these deliberately or consciously. Responses have to become intuitive, automatic, and **embodied** —meaning that they have to be based on fairly immediate emotional responses (Narvaez, 2009). The goal of character education is to develop students' capacities to respond to daily ethical choices not only consciously and cognitively, but also intuitively and emotionally. To the extent that this goal is met, students can indeed live a good, ethically responsible life.

Schoolwide Programs of Character Education

In the most comprehensive approaches to character education, an

entire school commits itself to develop students' ethical character, despite the immense diversity among students (Minow, Schweder, & Markus, 2008). All members of the staff—not just teachers and administrators, but also custodians and educational assistants—focus on developing positive relationships with students. The underlying theme that develops is one of cooperation and mutual care, not competition. Fairness, respect, and honesty pervade class and school activities; discipline, for example, focuses on solving conflicts between students and between students and teachers, rather than on rewarding obedience or punishing wrong-doers. The approach requires significant reliance on democratic meetings and discussions, both in classrooms and wherever else groups work together in school.

Building a Culture of Kindness

Video 7. *Building a Culture of Kindness* with a Day of Services discusses ways that schools are building character education into their programs and the impact it is having on students.



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Classroom Programs of Character Education

Even if a teacher is teaching character education simply within her classroom, there are many strategies available. The goal, in this case, is to establish the classroom as a place where everyone feels included, and where everyone treats everyone else with civility and respect. Conflicts and disagreements may still occur, but in a caring community, they can be resolved without undue anger or hostility. Here are a few ways to work toward this sort of classroom:

- Use class meetings to decide on as many important matters as possible—such as the expected rules of behavior, important classroom activities, or ongoing disagreements.
- Try arranging for students to collaborate on significant projects and tasks.
- Arrange a "Buddies" program in which students of different grade levels work together on a significant task. Older students can sometimes assist younger students by reading to them, by listening to them read, or both. If an older student is having trouble with reading himself or herself, furthermore, a reading buddies program can sometimes also be helpful to the older student.
- Familiarize students with conflict resolution strategies and practice using them when needed.
- Many areas of curriculum lend themselves to discussions about ethical issues. Obvious examples are certain novels, short stories, and historical events. However, ethical issues lurk elsewhere as well. Teaching nutrition, for example, can raise issues about the humane treatment of animals that will be slaughtered for food, and about the ethical acceptability of using a large number of grains to feed animals even though many people in the world do not have enough to eat.
- Service learning projects can be very helpful in highlighting issues of social justice. Planning, working at, and reflecting

about a local soup kitchen, tutoring students from low-income families, performing simple repairs on homes in need: projects like these broaden knowledge of society and the needs of its citizens.

Glossary

Ainsworth's strange situation: a sequence of staged episodes that illustrate the type of attachment between a child and (typically) their mother

adverse childhood experiences: abuse, neglect, and violent experiences that contribute to childhood trauma

aggressive-rejected: children who are ostracized because they are aggressive, loud, and confrontational

anal stage: the second stage in Freud's theory of psychosexual development, lasting from age 18 months to three years, during which time the anus is the primary erogenous zone and pleasure is derived from controlling bladder and bowel movements

athletic coach style of parenting: the rules for behavior are consistent and objective and presented in that way. The parent's role is to provide guidance while the child learns firsthand how to handle these situations

attachment: the positive emotional bond that develops between a child and a particular individual

authoritarian parenting: the traditional model of parenting in which parents make the rules and children are expected to be obedient

authoritative parenting: appropriately strict, reasonable, and affectionate. They are willing to negotiate when appropriate

autonomy vs. shame and doubt: Erikson's second crisis of psychosocial development, during which toddlers strive to gain a sense of self-rule over their actions and their bodies

average: children who receive an average number of positive and negative nominations from their peers

cisgender: an umbrella term used to describe people whose sense of personal identity and gender corresponds with their birth sex

clique: used to describe a group of persons who interact with each other more regularly and intensely than others in the same

setting. Cliques are distinguished from "crowds" in that their members interact with one another

controversial: children who are either strongly liked or strongly disliked by quite a few peers

conventional moral development: stages 3 and 4 of moral development where morality is internalized, and the concern is on society norms

crowds: large groups of adolescents defined by their shared image and reputation

delayed gratification: the ability to hold out for a larger reward by forgoing a smaller immediate reward

deviant peer contagion: process by which peers reinforce problem behavior by laughing or showing other signs of approval that then increase the likelihood of future problem behavior

disorganized attachment: a type of attachment that is marked by an infant's inconsistent reactions to the caregiver's departure and return

emotional regulation: the ability to respond to the ongoing demands of experience with the range of emotions in a manner that is socially tolerable and sufficiently flexible to permit spontaneous reactions, as well as the ability to delay spontaneous reactions as needed

false self-training: holding a child to adult standards while denying the child's developmental needs

food insecurity: limited or uncertain availability of safe, nutritious food

foreclosure: term for premature identity formation, which occurs when an adolescent adopts his or her parents' or society's role and values without questioning or analysis, according to Marcia's theory

gender: a term that refers to social or cultural distinctions of behaviors that are considered male or female

gender dysphoria: a condition listed in the DSM-5 in which people whose gender at birth is contrary to the one they identify with. This condition replaces "gender identity disorder"

gender expression: how one demonstrates gender (based on

traditional gender role norms related to clothing, behavior, and interactions); can be feminine, masculine, androgynous, or somewhere along a spectrum

gender identity: the way that one thinks about gender and self-identifies, can be woman, man, or genderqueer

goodness-of-fit: the notion that development is dependent on the degree of match between children's temperament and the nature and demands of the environment in which they are being raised

homophily: a tendency of individuals to form links disproportionately with others like themselves

identity achievement: Erikson's term for the attainment of identity, or the point at which a person understands who he or she is as a unique individual, in accord with past experiences and future plans; already questioned and made commitment according to Marcia's theory

identity vs. role confusion: Erikson's term for the fifth stage of development, in which the person tries to figure out "Who am I?" but is confused as to which of many possible roles to adopt

insecure-avoidant attachment: a pattern of attachment in which an infant avoids connection with the caregiver, as when the infant seems not to care about the caregiver's presence, departure, or even return

insecure-resistant/ambivalent attachment: a pattern of attachment in which an infant's anxiety and uncertainty are evident, as when the infant becomes very upset at separation from the caregiver and both resists and seeks contact on reunion

introjection: a process Freud described where children incorporate values from others into their value set

looking-glass self: the process by which our sense of self develops as we interact with others through various social relationships and incorporate the way those other people view us into our own sense of self

major depression: feelings of hopelessness, lethargy, and worthlessness that last two weeks or more

martyr parent: parent who will do anything for the child, even

tasks that the child should do independently, may later use what they have done for the child to invoke guilt and compliance

moratorium: an adolescent's choice of a socially acceptable way to postpone making identity-achievement decisions. Going to college is a common example. Engaged in questioning, but not yet making a commitment, according to Marcia's theory

negative punishment: a desirable stimulus is removed to decrease a behavior; for example, losing the privilege of playing a desired game or using a desired item

negative reinforcement: an undesirable stimulus is removed to increase a behavior; for example, the car beeping goes away when we click into the seatbelt

neglected: children who tend to go unnoticed but are not especially liked or disliked by their peers

pal parent: wants to be the child's friend and focuses on being entertaining and fun

parasuicide: any potentially lethal action against the self that does not result in death. (also called attempted suicide or failed suicide)

peer pressure: encouragement to conform to one's friends or contemporaries in behavior, dress, and attitude; usually considered a negative force, as when adolescent peers encourage one another to defy adult authority

permissive parenting: involves being a friend to a child rather than an authority figure. Children are allowed to make their own rules and determine their own activities

phallic stage: the third stage in Freud's theory of psychosexual development, lasting from age three to six years, during which the libido (desire) centers upon the genitalia and children become aware of bodies

police officer/drill sergeant parent: focuses primarily on making sure that the child is obedient and that the parent has full control of the child

popular-antisocial: children who gain popularity by acting tough or spreading rumors about others

popular-prosocial: children who are popular because they are nice and have good social skills

positive punishment: an undesirable stimulus is added to decrease a behavior; for example, spanking or receiving a speeding ticket

positive reinforcement: a desirable stimulus is added to increase a behavior; for example, stickers on a behavior chart or words of encouragement

post-conventional moral development: stages 5 and 6 of moral development where morality comes from personal understanding of rights and justice, regardless of whether that understanding matches societal norms

pre-conventional moral development: first 2 stages of moral development where morality comes from outside the person, and the concern is on physical consequences of actions

response inhibition: the ability to recognize a potential behavior and stop the initiation of an undesired behavior

role confusion: a situation in which an adolescent does not seem to know or care what his or her identity is. (Sometimes called identity diffusion or role diffusion)

secure attachment: a relationship in which an infant obtains both comfort and confidence from the presence of their caregiver

secure base: a parental presence that gives children a sense of safety as they explore their surroundings

self-awareness: a person's realization that they are a distinct individual whose body, mind, and actions are separate from those of other people

self-concept: the idea of who we are, what we are capable of doing, and how we think and feel

self-esteem: considered an important component of emotional health, self-esteem encompasses both self-confidence and self-acceptance. It is the way individuals perceive themselves and their self-value

separation anxiety: fear or distress caused by the departure of familiar significant others; most obvious between 9-14 months

sex: a term that denotes the presence of physical or physiological differences between males and females

sexual orientation: a term that refers to whether a person is sexually and romantically attracted to others of the same sex, the opposite sex, or both sexes

social smile: a smile evoked by a human face, normally first evident in infants about 6 weeks after birth

stranger wariness: fear is often associated with the presence of strangers where an infant expresses concern or a look of fear while clinging to a familiar person

suicide: the act of intentionally causing one's own death

suicidal ideation: thinking about suicide, usually with some serious emotional and intellectual or cognitive overtones

teacher-counselor parent: pays a lot of attention to expert advice on parenting and believes that as long as all of the steps are followed, the parent can rear a perfect child

temperament: inborn differences between one person and another in emotions, activity, and self-regulation, typically measured by the person's responses to the environment

toxic stress: excessive stress that exceeds a child's ability to cope, especially in the absence of supportive caregiving from adults

transgender: a term used to describe people whose sense of personal identity does not correspond with their birth sex

trust vs. mistrust: Erikson's first crisis of psychosocial development, during which infants learn basic trust if the world is a secure place where their needs (food, comfort, attention) are met

uninvolved parenting: parents who are disengaged from their children, do not make demands on their children, and are non-responsive

withdrawn-rejected: children who are excluded because they are shy and withdrawn

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