

PSYC 40: LIFESPAN DEVELOPMENT



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Psych 40: Lifespan Development

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CHAPTER OVERVIEW

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1.1: Introduction to Lifespan Development - What Will You Learn?

Learning Objectives

The items below are the Learning Objectives for Chapter 1. They are not the Section I Written Assignment Questions. Please find the Section I Written Assignment questions in Module 1 of the course - they are clearly identified as the questions you are to answer.

After reading "Introduction to Lifespan Development", you should be able to:

1. Discuss what it means to study lifespan development or psychology.
2. Explain the meaning of cohort.
3. Discuss the various ways of describing change and the influences that impact development.
4. Define culture and describe ways that culture impacts development.
5. Differentiate periods of human development.
6. Analyze your own location in the life span.
7. Compare and contrast different theories related to lifespan psychology.



Figure 1.1.1: Photo by [Mary Blackwey](#) on [Unsplash](#)

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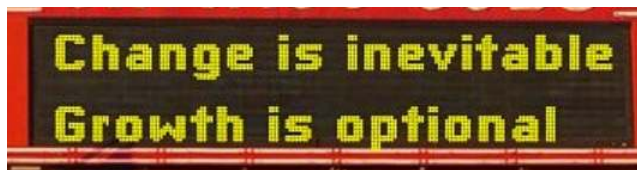
1.2: Describing and Explaining Development

Welcome to the most fascinating journey ever! The journey of YOU! This is the journey of exploration into the many influences that have contributed to your development and growth. A lifespan psychology course explores how we change and grow from conception to death - from the "womb to the tomb". In this course, you may see the terms, "Lifespan Psychology" and "Lifespan Development" used interchangeably and, in fact, in more ways than not, they are. However, please keep in mind that this is a psychology course, so we will mostly (although not exclusively in some areas) be focusing on the psychological aspects of development. In an official context, this field of psychology is studied by developmental psychologists, although we will examine a wide range of topics that are primarily studied by other types of psychologists, medical professionals, sociologists, biologists, and more. In other words, lifespan development is multi-disciplinary (it is studied by many disciplines). While "traditional" developmental psychologists believed that the most important changes happened early in life and there was little development that happened later, lifespan developmental psychologists view development as a lifelong process (from conception to death; "the womb to the tomb") that can be studied scientifically across these three main developmental domains: physical, cognitive, and psychosocial.

Developmental Domains

- Physical (or biological) 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. Piaget is probably the most influential theorist when it comes to cognitive development. We'll explore how he believed thinking changes as we move from knowing by sensing and doing to, ultimately, being able to understand things that are abstract.
- Psychosocial development involves emotions, personality, and social relationships. Erikson's psychosocial stages will feature prominently in our overview of psychosocial development.

As progress through the lifespan, we will explore each of these domains. We will examine how our lives and psychological states are influenced by experiences and how we interpret those experiences, as well as how our social relationships change throughout life.



Describing and Explaining Change

1. **Describing change** - Many of the theories we will examine simply involve the first step in investigation, which is description.
2. **Explaining change** - Theories provide explanations for why we change. For example, Erikson offers an explanation about why two-year-olds can be thought of as little researchers, just trying to figure out if their actions will get reliable and consistent results...or not, as they attempt to make sense of their world.

Think about how you were 5, 10, or even 15 years ago. In what ways have you changed? In what ways have you remained the same? You have probably changed in many realms including in the way you think and solve problems as well as how you relate to those around you. Psychological and cognitive change is especially noticeable when we compare how 6-year-olds, 16-year-olds, and 46-year-olds think and reason, for example. Their thoughts about others and the world are probably quite different from one another. Consider friendship, for instance. The 6-year-old may think that a friend is someone with whom you play and have fun with. A 16-year-old may seek friends who can help them gain status or popularity or with whom they can confide in. The 46-year-old may have many acquaintances but rely more on family members or a very small circle of close friends to do things with and confide in. You may have also experienced psychosocial change. This refers to emotions and psychological concerns as well as social relationships. Psychologist Erik Erikson suggests that as we navigate through life, we grapple with issues of trust vs. mistrust, intimacy vs. isolation, and other struggles at various points in our lives (we will explore this thoroughly throughout the course).

While definitely important, our journeys through life are much more than biological; they are also shaped by personality, experiences, resilience levels, perspectives, culture, economic and social realities as much as they are influenced by physical change. This is a fascinating and practical course because it is about YOU and those around you.

Issues For Consideration

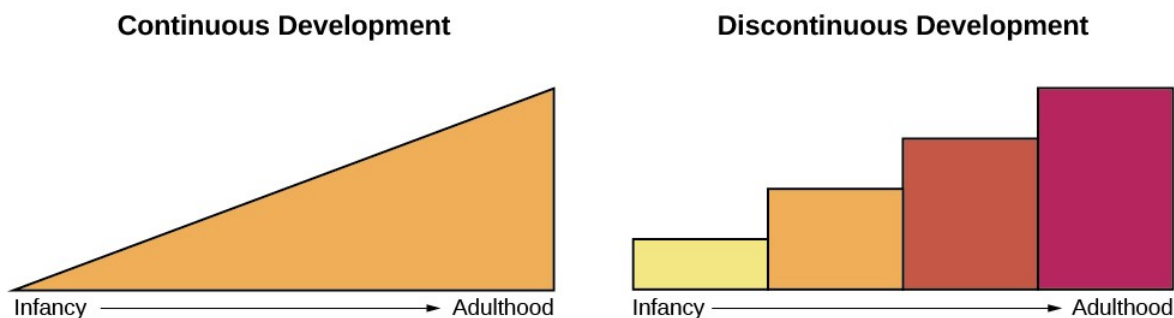
There are many different theoretical approaches regarding lifespan psychology. As we evaluate them, recall that lifespan psychology focuses on how people change, and keep in mind that all the approaches that we present address questions of change: How do we describe the changes, do they involve how, what, or why - or are they changes in amount? Is the change smooth or uneven (continuous versus discontinuous)? Is this pattern of change the same for everyone, or are there many different patterns of change (one course of development versus many courses)? How do genetics and environment interact to influence development (nature versus nurture)?

Is the Change Qualitative or Quantitative?

When we describe a change, we may do so with words (qualitative) or numbers (quantitative). A change in how, why, or what would be a qualitative change. While a change in how long, how tall, or how many would be a quantitative change. We can describe many things in both qualitative and quantitative ways. In discussing friendship at a given age, for example, we can discuss the sort of things that friends do and share (qualities) and we can discuss the amount of time friends spend with one another and how large one's social circle is likely to be (quantities).

Is Development Continuous or Discontinuous?

Continuous development views development as a cumulative process, gradually improving on existing skills. Continuous change refers to a process of adding on to what we are, what we know, and what we can do. With this type of development, there is gradual change. Consider, for example, a child's physical growth: adding inches to their height year by year. Or adding more words to one's vocabulary. In contrast, theorists who view development as discontinuous believe that development takes place in unique stages, it occurs at specific times or ages and the changes are not gradual. With this type of development, the change is more sudden, such as an infant's ability to conceive object permanence (the idea that something still exists, even if the infant can't see it). One day playing "peek-a-boo" is exciting and engaging - and the next it isn't. Instead of a change happening through a slow change in thinking, a significant change is suddenly made in how the infant thinks.



The concept of continuous development can be visualized as a smooth slope of progression, whereas discontinuous development sees growth in more discrete stages.

Is There One Course of Development or Many?

Is lifespan 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

follows one course for all children regardless of culture. However, child care 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 in order 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 are able to climb trees up to 25 feet tall and use machetes to chop their way through the forest (Kaplan & Dove, 1987). Our development is influenced by multiple contexts, so the timing of basic motor functions may vary across cultures. While all children are born with the same developmental potential, as established by their biology (nature), how development proceeds is impacted by various aspects of their environment (nurture). Despite the many different contexts in which development occurs, the functions themselves are present in all societies and all children, across the world, love to play.



Nature and Nurture

Nature refers to the biology we are born with, the genes that our parents have passed on to us. Nurture refers to the environments, social as well as physical, that influence our development, everything from the womb in which we develop before birth to the homes in which we grow up, the schools we attend, and the many people with whom we interact. The nature-nurture issue is often presented as an either-or question: Is our intelligence (for example) due to our genes or to the environments in which we live? In fact, however, every aspect of development is produced by the interaction of genes (nature) and environment (nurture). Some aspects of our behavior feel as though they originate in our genetic makeup, while others feel like the result of our upbringing or our own hard work. The scientific field of behavior genetics attempts to study these differences empirically, either by examining similarities among genetic members with different degrees of genetic relatedness or, more recently, by studying differences in the DNA of people with different behavioral traits. The scientific methods that have been developed are clever, but often inconclusive. Many of the difficulties encountered in the science of behavior genetics turn out to be conceptual, and our intuitions about nature and nurture get more complicated the harder we think about them. In the end, it is an oversimplification to ask how “genetic” some particular behavior is. Genes and environments always combine to produce behavior, and the real science is in the discovery of how they combine for a given behavior. Nature establishes our possibilities and nurture determines what we become.

Trying to untangle the various ways nature-nurture influences human behavior can be messy, and often common-sense notions can get in the way of good science. One very significant contribution of behavioral genetics that has changed psychology for good can be very helpful to keep in mind: When the people you study are genetically-related, no matter how clearly a situation may seem to point to environmental influence, it is never safe to interpret behavior as wholly the result of nurture without further evidence. For example, when presented with data showing that children, whose primary caregivers read to them, often are likely to have better reading scores in third grade, it is tempting to conclude that reading to your kids out loud is important to success in school; and this may well be true lots of times, but the study as described is inconclusive because there are genetic as well as environmental pathways between caregiver practices and the abilities of their children. Furthermore, there may be other elements of the environment that determine that may impact success. In this example, we see a correlational relationship that does not allow us to make a causal conclusion. In order to establish that reading aloud causes success, an experiment would have to be conducted that controls for other factors that might impact the results. We'll discuss this further when we consider research methods.

The outcomes of nature-nurture studies have fallen short of our expectations (of establishing clear-cut bases for traits) in many ways. The most disappointing outcome has been the inability to organize traits from more- to less-genetic. As noted earlier, everything has turned out to be at least somewhat heritable (passed down), yet nothing has turned out to be absolutely heritable, and there hasn't been much consistency as to which traits are more heritable and which are less heritable once other considerations (such as how accurately the trait can be measured) are taken into account (Turkheimer, 2000). The problem is conceptual: The heritability coefficient does not match up with our nature-nurture intuitions. We want to know how "important" the roles of genes and environment are to the development of a trait, but in focusing on "important" maybe we're emphasizing the wrong thing. Genes and environment are both crucial to every trait; without genes the environment would have nothing to work on, and too, genes cannot develop in a vacuum. Even more important, because nature-nurture questions look at the differences among people, the cause of a given trait depends not only on the trait itself but also on the differences in that trait between members of the group being studied.

So, we take a stance that the lifespan psychology view of development is that both nature and nurture play a role. The extent of which each play a role (some say 50/50) continues to be an interesting topic of discovery.



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1.3: Developmental Contexts

People are best understood in context. What is meant by the word “context”? It means that we are influenced by when and where we live and our actions, beliefs, and values are a response to circumstances surrounding us. Sternberg describes a type of intelligence known as “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. Our social locations include cohort, social class, gender, ethnicity, and age. Let’s explore two of these: cohort and social class.

The Cohort Effect

One important context that is sometimes mistaken for age is the **cohort effect**. A cohort is a group of people who are born at roughly the same period in a particular society. Cohorts share histories and contexts for living. Members of a cohort have experienced the same historic events and cultural climates which have an impact on the values, priorities, and goals that may guide their lives.



Figure 1.3.1: (Photo: Boys collecting old tires for rubber during WWII)

Consider a young boy’s concerns as he grows up in the United States during World War II. What his family buys is limited by their small budget and by a governmental program set up to ration food and other materials that are in short supply because of the war. He is eager rather than resentful about being thrifty and sees his actions as meaningful contributions to the good of others. As he grows up and has a family of his own, he is motivated by images of success tied to his past experience: a successful person is one who can provide for their family financially, who has a spouse who stays at home and cares for the children, and children who are respectful but enjoy the luxury of days filled with school and play without having to consider the burdens of society’s struggles.

He marries soon after completing high school, has three children, works hard to support his family and is able to do so during the prosperous postwar economics of the 1950s in America. But economic conditions change in the mid-1960s and through the 1970s. His spouse begins to work to help the family financially and to overcome boredom with being a stay-at-home caregiver. The children are teenagers in a very different social climate: one of social unrest, liberation, and challenging the status quo. They are not sheltered from the concerns of society; they see television broadcasts in their own living room of the war in Vietnam and they fear the draft. And they are part of a middle-class youth culture that is very visible and vocal. His employment as an engineer eventually becomes difficult as a result of downsizing in the defense industry. His marriage of 25 years ends in divorce. This is not a unique personal history, rather it is a story shared by many members of his cohort. Historic contexts shape our life choices and motivations as well as our eventual assessments of success or not during the course of our existence.



Figure 1.3.2: Women of different ages.

Consider your own cohort. Can you identify it? 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, and Millennial.

Socioeconomic Status (SES)

Another context that influences 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/caregiver styles, stressors, and other aspects of daily life. We are generally born into a class system or are socially located and may move up or down depending on socially and/or individually created limits and opportunities. Below is a model of the class system identified in the United States (Gilbert 2003; Gilbert and Kahl, 1998), a description of these social classes, and a partial listing of the impact that social class can have on individual and family life (Seccombe and Warner, 2004).

Model of Social Class Based on Socioeconomic Status

Upper Class

This group makes up about 1 percent of the population in the United States. They own substantial wealth and after-tax annual family income of between \$200,000 to \$750,000 (DeNavas-Walt and Cleveland, 2002). The upper class is subdivided into “upper-upper” and “lower-upper” categories based on how money and wealth were acquired. The “upper-upper class” (0.5%) has money from investments or inheritance and tends to be stewards of the family fortune. This “old money” brings a sense of polish and sophistication now shared by those with “new money”. The newly rich (0.5%) have made their fortunes as personalities in sports and media or as entrepreneurs. Members of the newly rich tend to flaunt their wealth; a practice looked upon with disdain by old money. One former student reported her experience as a flight attendant working in first class on a trip from New York to Los Angeles. One of her passengers had a name that would be familiar to many Americans as a family with old money. Seated several rows behind him was a couple from the newly rich and she wore a long fur coat, they became drunk on champagne and were quite loud during the flights. The plane had landed, and as the flight attendant was helping her upper-upper class guest on with his coat and he looked over his shoulder at the couple and sneered, “New money.” (So consider this: if you ever win the lottery, you may risk being shunned by “old money”!)

Upper Middle Class

Those in this class tend to hold professional degrees that involve education beyond a four-year bachelor’s degree. One of the distinctions made between the middle-class overall and members of the working class is that members of the middle class have occupations in which they are paid for their education and expertise. These white-collar workers (a term that originally referred to the distinction between what office workers wore to work as opposed to factory workers designated as “blue-collar” workers) tend to hold professional positions such as physicians or attorneys and as professionals.

Middle Class

Members of the middle class may hold college degrees, but often from less prestigious, state-supported schools. They own less property and have less discretionary income than members of the upper-middle and upper class and yet they may share the values and standards held by the upper-middle class. Yet, acquiring larger homes, newer vehicles, and pursuing travel, paying for health care and dental expenses often means taking on substantial debt. This problem is not unique to the United States, however.

Consider this excerpt from a British newspaper describing today's "impoverished professionals" in which a couple goes to dinner before a movie and realizes that they have no cash. So out come the 9 credit cards. Here is one personal story from someone who identifies as "middle-class:"

"I've brought all the cards . . . trouble is, I can't remember which ones are up to their limit . . . Go to a cash machine? Forget it. Both our current accounts have been frozen. Welcome to the world of middle-class debt . . . On paper, my husband and I are what is known in polite parlance as "comfortably off". In reality, we have no money. Anything that comes in goes immediately on debt repayment. That and paying the nanny so we can both go out to work and earn more money for more debt repayment. An Impoverished Professional, I call myself. And there are plenty of us out there."



Figure 1.3.3

The average amount of credit card debt in American households is \$8,000 and out of 144 million Americans who carry an "all purpose" credit card, only 55 million pay their entire balance off each month. The industry refers to these people as "deadbeats" and prefers the almost 90 million customers who extend their payment over months. These "revolvers" create nearly \$30 billion in profits for the industry. (Frontline, 2004). Carrying debt can be extremely stressful and have a negative effect on health and social well-being. The consequences of such debt are still being explored.

The Working Class

The working class is comprised of those working in occupations such as retail, clerical, or factory jobs. Their jobs are typically routine and more heavily supervised than those of the middle class and require less formal education than do white-collar jobs. Members of the working class are subject to plant closings, lower pay, and more frequent lay-offs, and may rely on fewer workers contributing to the family income. Fewer earners and less job stability impacts not only family income, it also impacts the likelihood of having adequate health care. Being employed does not insure adequate healthcare, necessarily. This can weigh as a tremendous stress for families and individuals. Americans who are self-employed or working in companies with fewer than 200 employees are also less likely to have health insurance benefits than those who work in companies with 200 or more employees (Weitz, 2007). And the cost of obtaining even minimal health insurance as an individual is often prohibitive (excessively high or nearly impossible to pay).

Social class differences go beyond financial concerns, however. In a classic study on parenting/caregiver styles and social class, Melvin Kohn (1977) found that working-class parents/caregivers emphasized obedience, honesty, and conformity in their children while middle-class parents/caregivers valued independence, initiative, and self-reliance. These differences are attributed to the expectations made of parents/caregivers as workers; blue-collar workers are rewarded for conformity while white-collar workers are rewarded for initiative.

The Working Poor

People in this category live near the poverty level and hold seasonal or temporary jobs as unskilled laborers. This includes migrant farm workers, temporary employees in service industries such as restaurants or in retail, typically for minimum wage. The poor and working poor experience many of the same problems that can have an impact on development.

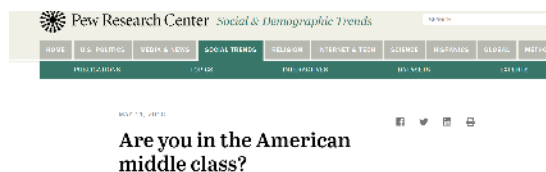
The Underclass

Those of the underclass category are described as temporary workers, part-time workers, those who are chronically unemployed or underemployed (Gilbert, 2003). They may receive some governmental assistance and tend to be looked down upon by other members of society. Since 2008, we have seen national unemployment rates in the United States hovering around 10 percent due to

changes in the economy and being unemployed is less stigmatized but still very stressful. Many of the underclass are children or are disabled.

Other Consequences of Poverty

Poverty level is an income amount established by the Social Security Administration that is based on a formula called the “thrifty food plan” that allows one-third of income for food. Those living at or near poverty level may find it extremely difficult to sustain a household with this amount of income. Buying the least expensive, most filling foods typically means buying foods high in fat, starch and sugar. Living in poorer housing with the fear of eviction or poor plumbing and disruptive neighbors can also be extremely stressful. Poverty is associated with poorer health and a lower life expectancy due to poorer diet, less healthcare, greater stress, working in more dangerous occupations, higher infant mortality rates, poorer prenatal care, greater iron deficiencies, greater difficulty in school, and many other problems. Members of the middle class may fear losing status, but the poor may have greater concerns over losing housing. And while those in the middle class are more likely to use shopping or travel as a way to cope with stressors, the poor are more likely to eat or smoke in response to stress (Seccombe and Warner, 2004).



Just for your own interest: See where you are in the distribution of United States Americans by income tier. Enter the location that best describes where you live, your household income and the number of people in your household. The calculator adjusts for the cost of living in your area.

Middle-Class-Calculator

Culture

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/caregivers, schools, spiritual institutions, media (especially in the United States!), friends and others throughout a lifetime. The kinds of traditions and values that evolve in a particular culture serve to help members function (or not) in their own society and to value (or not) their own society. We tend to believe that our own culture's practices and expectations are the "right" ones. (This belief that one's own culture is superior to others is called **ethnocentrism** and is a typical 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.



Figure 1.3.4

Culture is an extremely important context for lifespan psychology and understanding development requires being able to identify which features of development (and the psychology 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. Please keep in mind and realize that there is still much that is unknown when comparing development across cultures. (For example, consider Erikson's assumption 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 or luxury to explore.)

Next, we will explore a brief outline of the periods of development in the lifespan that we will cover this term.



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1.4: Age

What is "age"? As we consider change across the lifespan, we need to re-think our understanding of what "age" refers to. While all 3-year-olds are going to be very alike with respect to their behaviors and abilities, as we get older the variations will increase considerably and we need other ways to describe those differences. We also need to have clear definitions for explaining how long we live. What's the difference between how long we can expect to live (life expectancy) as compared to how long we can live (maximum lifespan)?

Conceptions of Age

How old are you? Chances are you would answer that question *based on the number of years since your birth, or what is called your **chronological age***. Ever felt older than your chronological age? Some days we might “feel” like we are older, especially if we are not feeling well, are tired, or are stressed out. We might notice that a peer seems more emotionally mature than we are, or that they are physically more capable. So years since birth is not the only way we can conceptualize age.



You are as young as you feel!

Biological age: Another way developmental researchers can think about the concept of age is to examine *how quickly the body is aging, this is your **biological age***. Several factors determine the rate at which our body ages. Our nutrition, level of physical activity, sleeping habits, smoking, alcohol consumption, how we mentally handle stress, and the genetic history of our ancestors, to name but a few.

Psychological age: *Our psychologically adaptive capacity compared to others of our chronological age is our **psychological age***. This includes our cognitive capacity along with our emotional beliefs about how old we are. An individual who has cognitive impairments might be 20 years of age yet has the mental capacity of an 8 year-old. A 70 year-old might be traveling to new countries, taking courses at college, or starting a new business. Compared to others of our age group, we may be more or less able to adapt and handle new challenges. Psychological age is about how *young* or *old* you feel.

Social age: Our **social age** is based on the social norms of our culture and the expectations our culture has for people of our age group. Our culture often reminds us whether we are “on target” or “off target” for reaching certain social milestones, such as completing our education, moving away from home, having children, or retiring from work. However, there have been arguments that social age is becoming less relevant in the 21st century (Neugarten, 1979; 1996). If you look around at your fellow students in your courses at college you might notice more people who are older than the more traditional aged college students, those 18 to 25. Similarly, the age at which people are moving away from the home of their parents, starting their careers, getting married or having children, or even whether they get married or have children at all, is changing.

Those who study lifespan development recognize that chronological age does not completely capture a person's age. Our age profile is much more complex than this. A person may be physically more competent than others in their age group, while being psychologically immature. So, how old are you?

Life Expectancy vs Lifespan

Lifespan or **Maximum Lifespan** is referred to as the greatest age reached by any member of a given population (or species). For humans, the lifespan is currently between 120 and 125. **Life Expectancy** is defined as the average number of years that members of a population (or species) live. According to the World Health Organization (WHO) (2016) global life expectancy at birth in 2015 was 71.4 years, with females reaching 73.8 years and males reaching 69.1 years. Women live longer than men around the world, and the gap between the sexes has remained the same since 1990. Overall life expectancy ranged from 60.0 years in the WHO African Region to 76.8 years in the WHO European Region. Global life expectancy increased by 5 years between 2000 and 2015, and the largest increase was in the WHO African Region where life expectancy increased by 9.4 years. This was due primarily to improvements in child survival and access to antiretroviral medication for the treatment of HIV. According to the Central Intelligence Agency (2016) the United States ranks 43rd in the world for life expectancy.

World Healthy Life Expectancy: A better way to appreciate the diversity of people in late adulthood is to go beyond chronological age and examine how well the person is aging. Many in late adulthood enjoy better health and social well-being than average and would be aging at an optimal level. In contrast, others experience poor health and dependence to a greater extent than would be considered normal. When looking at large populations, the WHO (2016) measures how many equivalent years of full health on average a newborn baby is expected to have. *This age takes into account current age-specific mortality, morbidity, and disability risks and is referred to as The Healthy Life Expectancy.* In 2015, the global Healthy Life Expectancy was 63.1 years up from 58.5 years in 2000. The WHO African Region had the lowest Healthy Life Expectancy at 52.3 years, while the WHO Western Pacific Region had the highest at 68.7 years.

Life Expectancy in America: In the United States the overall life expectancy is 79.7 years, however, life expectancies vary by sex, race, and ethnicity. Table 9.3 shows the life expectancy of three demographic groups for males and females for a child born in 2012 (Ortman et al., 2014). As can be seen, females enjoy a longer life expectancy, and overall Hispanics have the highest life expectancy.

2012 U. S. Life Expectancy by Sex, Race, and Ethnic Origin in Years

Demographic	Female	Male
All Groups	81.97	77.32
Non-Hispanic White and Asian or Pacific Islander	81.7	77.1
Non-Hispanic Black and American Indian or Alaskan Native	78.0	71.7
Hispanic	83.7	78.9

Compiled from data from An Aging Nation: The older population in the United States.

United States Census Bureau. <http://www.census.gov/prod/2014pubs/p25-1140.pdf>

American Healthy Life Expectancy: To determine the current United States Healthy Life Expectancy (HLE), factors were evaluated in 2007-2009 to determine how long an individual currently at age 65 will continue to experience good health (CDC, 2013). The highest Healthy Life Expectancy (HLE) was observed in Hawaii with 16.2 years of additional good health, and the lowest was in Mississippi with only 10.8 years of additional good health. Overall, the lowest HLE was among southern states. Females had a greater HLE than males at age 65 years in every state and DC. HLE was greater for whites than for blacks in DC and all states from which data were available, except in Nevada and New Mexico.

Although improvements have occurred in overall life expectancy, children born in the United States today may be the first generation to have a shorter life span than their parents. Much of this decline has been attributed to the increase in sedentary lifestyle and obesity. According to the American Heart Association (2014), currently one in three American children is overweight or obese. The rate of childhood obesity tripled from 1971 to 2011, and obesity in children is associated with a range of health problems, including high blood pressure, type 2 diabetes, elevated blood cholesterol levels, and psychological concerns including low self-esteem, negative body image and depression. Excess weight is associated with an earlier risk of obesity-related diseases

and death. In 2007 former Surgeon General Richard Carmona stated, “Because of the increasing rates of obesity, unhealthy eating habits and physical inactivity, we may see the first generation that will be less healthy and have a shorter life expectancy than their parents” (p. 1).

Concept Check

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1.5: Periods of Development

As we explore development across the lifespan, we will divide the lifespan into discrete stages or periods of development. Each of these stages is associated with a range of ages and we can describe what is expected during each of them. This general understanding of each stage of life is what makes this course valuable and, at times, a little overwhelming. In order to make it manageable, we'll strive to make connections between life stages and across theories. In addition, important concepts and terminology will be emphasized to assist you in learning them. In addition to exploring basic development theories and the research methods that are employed to develop our understanding, we will progress through the following periods of development:

- Conception and Prenatal Development
- Infancy
- Early Childhood
- Middle Childhood
- Adolescence
- Emerging/Early Adulthood
- Middle Adulthood
- Late Adulthood
- Death and Dying

As we consider each stage of life, we'll consider physical, cognitive, and psychosocial development. So, while both an 5-year-old and a 10-year-old are considered children, they have very different abilities, social relationships, and cognitive skills. Their nutritional needs are different and their primary psychological concerns are also distinctive. The same is true of an 18-year-old and an 80-year-old, both considered adults. We will discover the distinctions between being 28 or 48 as well. But first, here is a brief overview of the stages.



Figure 1.5.1: Two smiling girls. (License; Author via Source)

Prenatal Development

The developmental journey begins at conception, when egg and sperm combine to form a zygote. All of the major structures of the body are forming and the health of the pregnant person is of primary concern. Understanding nutrition, teratogens (environmental factors that can interfere with development), and labor and delivery are primary concerns. We'll explore the role of genes and chromosomes, the importance of the prenatal environment, and the various prenatal stages as we consider the processes that result in a new life entering the world.



Figure 1.5.2: At the embryo stage the head is large and arms and legs are visible. (CC BY; [lunar caustic](#) via [Flickr](#))

Infancy and Toddlerhood

The first few years of life are ones of dramatic growth and change. A newborn, with a keen sense of hearing but very poor vision is transformed into a walking, talking toddler within a relatively short period of time.

Caregivers are also transformed from someone who manages feeding and sleep schedules to a constantly moving guide and safety inspector for a mobile, energetic child.



Early Childhood

Early childhood is also referred to as the preschool years consisting of the years which follow toddlerhood and precede formal schooling. As a 3-5-year-olds, the child is busy learning language, gaining a sense of self and greater independence, and beginning to learn the workings of the physical world. This knowledge does not come quickly, however, and preschoolers may initially have interesting conceptions of size, time, space, and distance - such as fearing that they may go down the drain if they sit at the front of the bathtub or by demonstrating how long something will take by holding out their two index fingers several inches apart. A toddler's fierce determination to do something may give way to a four-year-old's sense of guilt for doing something that brings the disapproval of others.

Middle Childhood

The ages of about 6-11 comprise middle childhood and much of what children experience at this age is connected to their involvement in the early grades of school. Now, the world becomes one of learning and testing new academic skills and by assessing one's abilities and accomplishments by making comparisons between self and others. Schools compare students and make these comparisons public through team sports, test scores, and other forms of recognition and children begin to learn about social relationships beyond the family through interaction with friends and other students.



Figure 1.4.1: Photo by [note thanun](#) on [Unsplash](#)

Adolescence

Adolescence is a period that begins with the physical changes associated with puberty and ends with the transition to adulthood (approximately ages 10–18ish). It is a period of dramatic physical change marked by an overall physical growth spurt and sexual maturation, known as puberty. It is also a time of cognitive and psychological change as the adolescent begins to think of new possibilities and to consider abstract concepts such as love, fear, and freedom. Ironically, adolescents have a sense of invincibility that puts them at greater risk of dying from accidents or contracting sexually transmitted infections that can have lifelong consequences.



Emerging/Early Adulthood

Emerging adulthood is a newer term that has been proposed as a new life stage between adolescence and early adulthood, lasting roughly from ages 18 to 25. Not everyone experiences emerging adulthood though, as this is a cultural phenomenon we will explore. The twenties and thirties are more traditionally thought of as early adulthood. We will be studying the difference between emerging adulthood and early adulthood in this course. It is a time when we are at our physiological peak but are most at risk for involvement in violent crimes and long term substance abuse. It is a time of focusing on the future and putting a lot of energy into making choices for that. Typically, love and work are primary concerns at this stage of life.



Middle Adulthood

The 40's-60's is referred to as middle adulthood. This is a period in which aging, that began earlier, becomes more noticeable and a period at which many people are at their peak of productivity in love and work. It may be a period of gaining expertise in certain fields and being able to understand problems and find solutions with greater efficiency than before. It can also be a time of becoming more realistic about possibilities in life previously considered; of recognizing the difference between what is possible and what is likely.

Late Adulthood

Late adulthood is sometimes subdivided into two or three categories such as the "young old," "middle old," and "oldest old". We will follow the former categorization and make the distinction between the "young old" who are people between 65 and 79 and the "old old" or those who are 80 and older. One of the primary differences between these groups is that the young old are very similar to midlife adults; still working, still relatively healthy, and still interested in being productive and active. The "old old" remain productive and active and the majority continues to live independently, but risks of the diseases of old age such as arteriosclerosis, cancer, and cerebral vascular disease increases substantially for this age group. Issues of housing, healthcare, and extending active life expectancy are only a few of the topics of concern for this age group. A better way to appreciate the diversity of people in late adulthood is to go beyond chronological age and examine whether a person is experiencing optimal aging (aging with maximum psychological and physical well-being for one's own makeup, which can vary greatly from person to person), normal aging (in which the changes are similar to most of those of the same age), or impaired aging (referring to someone who has more physical and/or psychological challenges and disease than others of the same age).



Death and Dying

This topic is seldom given the amount of coverage it deserves. Of course, there is a certain discomfort in thinking about death but there is also a certain confidence and acceptance that can come from studying death and dying. We will be examining the physical, psychological, and social aspects of death, exploring grief or bereavement, and addressing ways in which helping professionals work in death and dying. And we will discuss cultural variations in mourning, burial, and grief.



Figure: Photo by **Brett Sayles** from **Pexels**

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1.6: Introduction to Developmental Theories - Psychodynamic

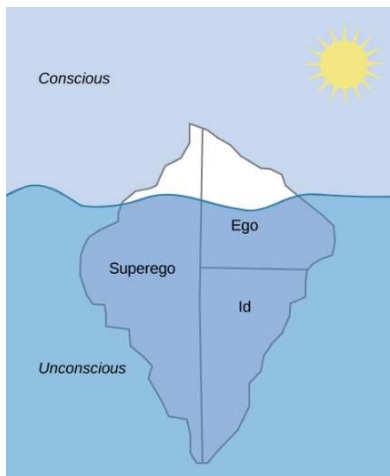
We'll begin our exploration of theories of development with two influential men who both provide us with interesting, but very different, ways of looking at how our unconscious impulses and desires impact development. You have probably heard of our first influencer, none other than Freud - who provided us with Psychosexual Stages. In stark contrast to Freud's focus on internal impulses, Erikson provided us with Psychosocial Stages.

Freud

We begin with a very brief overview of the often controversial figure, Sigmund Freud. 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 1950s. His assumptions that personality forms during the first few years of life and that the ways in which parents/caregivers interact with children have a long-lasting impact on children's emotional states have guided parents/caregivers, 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 resiliency 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.

Theory of the Mind

Freud believed that most of our mental processes, motivations and desires are outside of our awareness. Our consciousness, that of which we are aware, represents only the tip of the iceberg that comprises our mental state. The preconscious represents that which can easily be called into the conscious mind. During development, our motivations and desires are gradually pushed into the unconscious because raw desires are often unacceptable in society.



Theory of the Self

According to Freud's theory: As adults, our personality or self consists of three main parts: the id, the ego and the superego. The *id* is the seat of drives and instincts, whereas the *ego* represents the logical, reality-oriented part of the mind, and the *superego* is basically your conscience—the moral guidelines, rules, and prohibitions that guide your behavior. The superego is the part of the self that develops as we learn the rules, standards, and values of society. This part of the self takes into account the moral guidelines that are a part of our culture. If a person violates the superego, they feel guilty. The superego is useful but can be too strong; in this case, a person might feel overly anxious and guilty about circumstances over which they had no control. Such a person may experience high levels of stress and inhibition that keeps them from living well. The id is inborn, but the ego and superego develop during the course of our early interactions with others. These interactions occur against a backdrop of learning to resolve early biological and social challenges and play a key role in our development. According to Freud, you acquire these through your family/caregivers and through the culture in which you were raised.

Next, we have defense mechanisms. Defense mechanisms emerge to help a person distort reality so that the truth is less painful. Defense mechanisms include **repression** which means to push the painful thoughts out of consciousness (in other words, think about something else). **Denial** is basically not accepting the truth or lying to the self. Thoughts such as “it won’t happen to me” or “you’re not leaving” or “I don’t have a problem with alcohol” are examples. **Regression** refers to going back to a time when the world felt like a safer place, perhaps reverting to one’s childhood. An example might be acting (or maybe talking) like a child to get needs met. This is less common than the first two defense mechanisms. **Sublimation** involves transforming unacceptable urges into more socially acceptable behaviors, often to an extreme. For example, a teenager who experiences strong sexual urges in a way they do not want to express, uses excessive gym workouts to redirect those urges into more socially acceptable behavior. **Displacement** involves taking out frustrations on to a safer target (example, snapping at your partner because you feel frustrated that your boss was grumpy to you at work today). **Projection** is a defense mechanism in which a person attributes their unacceptable thoughts or actions onto others. Example: Someone stating, “YOU made me yell at you because you rolled your eyes at me”. Another example: If someone is frightened, for example, they accuse someone else of being afraid. Finally, **reaction formation** is a defense mechanism in which a person outwardly opposes something they inwardly desire, but that they find unacceptable. An example of this might be homophobia or a strong hatred and fear of the LGBTQ community. This is a partial listing of defense mechanisms suggested by Freud. If the ego is strong, the individual is realistic and accepting of reality and remains more logical, objective, and reasonable. Building ego strength is a major goal of psychoanalysis (Freudian psychotherapy). So for Freud, having a big ego is a good thing because it does not refer to being arrogant (as is part of today’s terminology), it refers to being able to accept reality.

Freud's Psychosexual Stages

Freud’s most direct contribution to the study of development is his psychosexual stages. At any of these stages, the child might become “stuck” or fixated if a caregiver either overly indulges or neglects the child’s needs. A fixated adult will continue to try and resolve this later in life. Examples of fixation are given after the presentation of each stage.

For about the first year of life, the infant is in the **oral stage** of psychosexual development. The infant meets needs primarily through oral gratification. A baby wishes to suck or chew on any object that comes close to the mouth. Babies explore the world through the mouth and find comfort and stimulation as well. Psychologically, the infant is all Id. The infant seeks immediate gratification of needs such as comfort, warmth, food, and stimulation. If the caregiver meets oral needs consistently, the child will move away from this stage and progress further. However, if the caregiver is inconsistent or neglectful, the person may stay stuck in the oral stage. As an adult, the person might not feel good unless involved in some oral activity such as eating, drinking, smoking, nail-biting, or compulsive talking. These actions bring comfort and security when the person feels insecure, afraid, or bored.

During the **anal stage** which coincides with toddler-hood or mobility and potty-training, the child is taught that some urges must be contained and some actions postponed. There are rules about certain functions and when and where they are to be carried out. The child is learning a sense of self-control. The ego is being developed. If the caregiver is extremely controlling about potty training (stands over the child waiting for the smallest indication that the child might need to go to the potty and immediately scoops the child up and places him on the potty chair, for example), the child may grow up fearing losing control. He may become fixated in this stage or “anal retentive”-fearful of letting go. Such a person might be extremely neat and clean, organized, reliable, and controlling of others. If the caregiver neglects to teach the child to control urges, he may grow up to be “anal expulsive” or an adult who is messy, irresponsible, and disorganized.

The **phallic stage** occurs during the preschool years (ages 3-5) when the child has a new biological challenge to face. Freud believed that the child becomes sexually attracted to his or her opposite sexed parent. Boys experience the “Oedipal Complex” in which they become sexually attracted to their mothers but realize that Father is in the way. He is much more powerful. For a while, the boy fears that if he pursues his mother, father may castrate him (castration anxiety). So rather than risking losing his penis, he gives up his affections for his mother and instead learns to become more like his father, imitating his actions and mannerisms and

thereby learns the role of males in his society. From this experience, the boy learns a sense of masculinity. He also learns what society thinks he should do and experiences guilt if he does not comply. In this way, the superego develops. If he does not resolve this successfully, he may become a “phallic male” or a man who constantly tries to prove his masculinity (about which he is insecure) by seducing women and beating up men! A little girl experiences the “Electra Complex” in which she develops an attraction for her father but realizes that she cannot compete with mother and so gives up that affection and learns to become more like her mother. This is not without some regret, however. Freud believed that the girl feels inferior because she does not have a penis (experiences “penis envy”). But she must resign herself to the fact that she is female and will just have to learn her inferior role in society as a female. However, if she does not resolve this conflict successfully, she may have a weak sense of femininity and grow up to be a “castrating female” who tries to compete with men in the workplace or in other areas of life.

During middle childhood (6-11), the child enters the **latent stage** focusing his or her attention outside the family and toward friendships. The biological drives are temporarily quieted (latent) and the child can direct attention to a larger world of friends. If the child is able to make friends, he or she will gain a sense of confidence. If not, the child may continue to be a loner or shy away from others, even as an adult.

The final stage of psychosexual development is referred to as the **genital stage**. From adolescence throughout adulthood a person is preoccupied with sex and reproduction. The adolescent experiences rising hormone levels and the sex drive and hunger drives become very strong. Ideally, the adolescent will rely on the ego to help think logically through these urges without taking actions that might be damaging. An adolescent might learn to redirect their sexual urges into safer activity such as running, for example. Quieting the Id with the Superego can lead to feeling overly self-conscious and guilty about these urges. Hopefully, it is the ego that is strengthened during this stage and the adolescent uses reason to manage urges.

Freud's Psychosexual Stages - Summarized (All ages are approximated)

Ages	Life Stage	Psychosexual Stage	Characteristics
0–1	Infancy	Oral	Needs met through putting things in the mouth - eating, sucking on a pacifier, exploring by mouthing
1–3	Toddler-hood	Anal	Coincides with "terrible two's" and the infant's desire to be in control - of choices and potty-training
3–6	Early Childhood	Phallic	Development of gender identity through identification with same-sex parent
6-11	Middle Childhood	Latency	Focus on friendships
11-	Adolescence	Genital	Adolescent and adult focus on sex and reproduction

Strengths and Weaknesses of Freud's Theory

Freud's theory has been heavily criticized for several reasons. Freud focuses on the darker side of human nature and suggests that much of what determines our actions is 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/caregiver practices. Freud's theory has heuristic value in providing a framework from which elaborate and modified subsequent theories of development have formed. Many later theories were challenges to Freud's views.

Erik Erikson's Psychosocial Theory

Erik Erikson (1902–1994) another stage theorist, took Freud's theory and modified it as psychosocial theory. Erikson's psychosocial development theory emphasizes the social nature of our development. While Freud believed that personality is shaped

only in childhood, Erikson proposed that personality development takes place all through the lifespan. Erikson suggested that how we interact with others is what affects our sense of self, or what he called the ego identity.

Erikson proposed 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, 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.

According to Erikson (1963), trust is the basis of our development during infancy (birth to 12 months). Therefore, the primary task of this stage is **trust versus mistrust**. Infants are dependent upon their caregivers, so caregivers who are responsive and sensitive to their infant's needs help their baby to develop a sense of trust; their baby will see the world as a safe, predictable place. Unresponsive caregivers who do not meet their baby's needs consistently can engender feelings of anxiety, fear, and mistrust; their baby may see the world as unpredictable and scary.

As toddlers (about age 1–3 years) begin to explore their world, they learn that they can control their actions and act on the environment to get results. They begin to show clear preferences for certain elements of the environment, such as food, toys, and clothing. A toddler's main task is to resolve the issue of **autonomy versus shame and doubt**, by working to establish independence. This is the "me do it" stage. For example, we might observe a budding sense of autonomy in a 2-year-old child who wants to choose her clothes and dress herself. Although her outfits might not be appropriate for the situation, her input in such basic decisions has an effect on her sense of independence (one idea to help toddlers when getting dressed, is to select 2-4 outfits that would be appropriate and let them choose which they prefer. Having said that, if you know a toddler, you may not be surprised when they reject ALL of the choices you have selected. This is a gentle reminder to laugh when this happens! After all, they are like little researchers just trying to figure out the world around them and are more often than not, pretty hilarious!). If denied the opportunity to act on her environment, she may begin to doubt her abilities, which could lead to low self-esteem and feelings of shame throughout her entire life (not to worry too much though...there are many ways to heal this, including sessions with a skilled therapist and classes like this one to help you understand your own development and to empower you to grow beyond anything that hinders you, psychologically).

Once children reach the preschool stage (ages 3–6 years), they are capable of initiating activities and asserting control over their world through social interactions and play. According to Erikson, preschool children must resolve the task of **initiative versus guilt**. By learning to plan and achieve goals while interacting with others, preschool children can master this task. Those who do will develop self-confidence and feel a sense of purpose. Those who are unsuccessful at this stage—with their initiative misfiring or stifled—may develop long-term feelings of guilt whenever they make a decision. Do you know anyone like that? Erikson would look to his theory to help explain it. Can you see how over-controlling parents/caregivers might stifle a child's initiative?

During the elementary school stage (ages 6–12), children face the task of **industry versus inferiority**. Children begin to compare themselves to their peers to see how they measure up. They either develop a sense of pride and accomplishment in their schoolwork, creative endeavors, sports, social activities, and family life, or risk feeling inferior and inadequate when they don't measure up (even if it's only in their imagination that they don't "measure up" to others). What are some things parents/caregivers and educators can do to help children develop a sense of competence and a belief in themselves and their abilities?

In adolescence (ages 12–18), children face the task of **identity versus role confusion**. According to Erikson, an adolescent's main task is developing a sense of self. Adolescents struggle with questions such as "Who am I?" and "What do I want to do with my life?" Along the way, most adolescents try on many different selves to see which ones fit. Adolescents who are successful at this stage have a strong sense of identity and are able to remain true to their beliefs and values in the face of problems and other people's perspectives. What happens to apathetic adolescents, who do not make a conscious search for identity, or those who are pressured to conform to their parents and caregivers ideas for the future? These teens will have a weak sense of self and experience role confusion. They are unsure of their identity and confused about the future.

People in emerging and early adulthood (18ish through 30s) are concerned with **intimacy versus isolation**. After we have developed a sense of self in adolescence, we are more ready to share our life with others. Erikson said that we must have a strong sense of self before developing healthy intimate relationships with others. Adults who do not develop a positive self-concept in adolescence may experience feelings of loneliness and emotional isolation.

When people reach their 40s, they enter the time known as middle adulthood, which extends to the mid-60s. The social task of middle adulthood is **generativity versus stagnation**. Generativity involves finding your life's work and contributing to the development of others, through activities such as volunteering, mentoring others, or perhaps raising children. Those who do not master this task may experience stagnation, having little connection with others and little interest in productivity and self-improvement. people in stagnation report higher levels of depression than those experiencing generativity.

From the mid-60s to the end of life, we are in the period of development known as late adulthood. Erikson's task at this stage is called **ego integrity versus despair**. He said that people in late adulthood reflect on their lives and feel either a sense of satisfaction or a sense of failure. They have resolved regrets and have understood how each life experience had led to help them grow. However, people who are not successful at this stage may feel as if their life has been wasted. They focus on what "would have," "should have," and "could have" been. They face the end of their lives with feelings of bitterness, depression, and despair. Below is a summary of the stages of Erikson's theory.

Erikson's Psychosocial Stages (All ages are approximated)

Age	Life Stage	Psychosocial Stage (Task)	Characteristics
0–1	Infancy	Trust vs. Mistrust	Trust (or mistrust) that basic needs, such as nourishment and affection, will be met consistently.
1–3	Toddler-hood	Autonomy vs. Shame/Doubt	Develop a sense of independence in many tasks.
3–6	Early Childhood	Initiative vs. Guilt	Take initiative on some activities—may develop guilt when underguided/overguided by caregivers.
7–11	Middle Childhood	Industry vs. Inferiority	Develop self-confidence in abilities when competent or sense of inferiority when not.
12–18	Adolescence	Identity vs. Role Confusion	Experiment with and develop identity and roles.
19–30s	Early/Emerging Adulthood	Intimacy vs. Isolation	Establish intimacy and relationships with others.
40–64	Middle Adulthood	Generativity vs. Stagnation	Contribute to society and others.
65–	Late Adulthood	Integrity vs. Despair	Assess and make sense of life and meaning of contributions.

These eight stages form a foundation for discussions on emotional, social, and psychological development during the lifespan. Erikson's theory has been 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 that are 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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1.7: Introduction to Developmental Theories - Behavioral and Social Learning Theories

Behavioral Theories

Behavioral theories focus on exhibited behaviors as opposed to offering underlying reasons for our actions. How are our responses modified by our prior experiences? These theories provide an explanation of how experience can change what we are capable of doing or feeling. We'll focus on two impactful forms of learning that explain many aspects of animal - and human - behavior.

Classical Conditioning and Emotional Responses

Classical Conditioning theory helps us to understand how our responses to one situation become attached to new situations. For example, a smell might remind us of a time when we were a kid (elementary school cafeterias smell like milk and mildew!). If you went to a new cafeteria with the same smell, it might evoke feelings you had when you were in school. Or a song on the radio might remind you of a memorable evening you spent with your first true love. Or, if you hear your entire name (John Wilmington Brewer, for instance) called as you walk across the stage to get your diploma and it makes you tense because it reminds you of how your father used to use your full name when he was mad at you, you've been classically conditioned!

Classical conditioning explains how we develop many of our emotional responses to people or events or our "gut level" reactions to situations. New situations may bring about an old response because the two have become connected. Attachments form in this way. Addictions are affected by classical conditioning, as anyone who's tried to quit smoking can tell you. When you try to quit, everything that was associated with smoking makes you crave a cigarette.

Pavlov

Ivan Pavlov (1880-1937) was a Russian physiologist interested in studying digestion. As he recorded the amount of salivation his laboratory dogs produced as they ate, he noticed that they actually began to salivate before the food arrived as the researcher walked down the hall and toward the cage. "This," he thought, "is not natural!" One would expect a dog to automatically salivate when food is placed in its mouth, but before the food comes? Of course, what had happened was . . . you tell me. That's right! The dogs knew that the food was coming because they had learned to associate the footsteps with the food. The key word here is "learned". A learned response is called a "conditioned" response. In other words, "conditioned" is a fancy word for "learned."



Ivan Pavlov

Pavlov began to explore this "psychic" reflex. He began to ring a bell, for instance, prior to introducing the food. Sure enough, after making this connection several times, the dogs could be made to salivate to the sound of a bell. Once the bell had become an event to which the dogs had learned to salivate, it was called a conditioned stimulus. The act of salivating to a bell was a response that had also been learned, now termed in Pavlov's jargon, a conditioned response. Notice that the response, salivation, is the same whether it is conditioned (learned) or unconditioned (unlearned or natural). What changed is the stimulus to which the dog salivates. One is natural (unconditioned) and one is learned (conditioned). Well, enough of Pavlov's dogs. Who cares? Let's think about how classical conditioning is used on us. One of the most widespread applications of classical conditioning principles was brought to us by the psychologist, John B. Watson.

Watson and Behaviorism

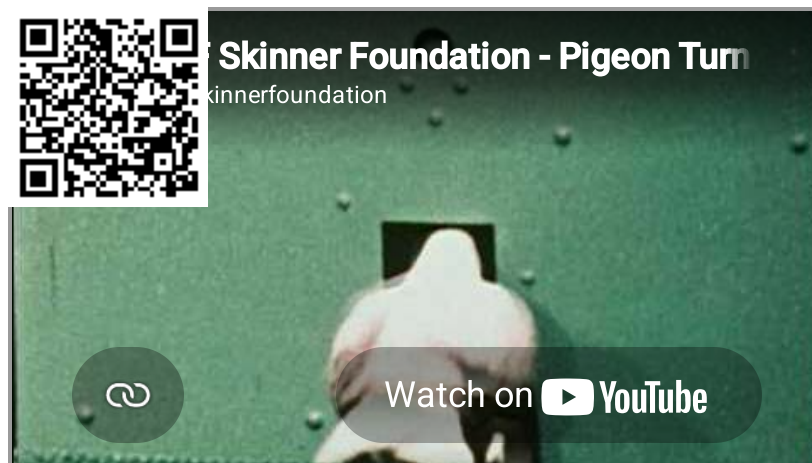
Watson believed that most of our fears and other emotional responses are classically conditioned. He had gained a good deal of popularity in the 1920s with his expert advice on parenting offered to the public. He believed that parents could be taught to help shape their children's behavior and tried to demonstrate the power of classical conditioning with his famous experiment with an 18-

month-old boy named “Little Albert”. Watson sat Albert down and introduced a variety of seemingly scary objects to him: a burning piece of newspaper, a white rat, etc. But Albert remained curious and reached for all of these things. Watson knew that one of our only inborn (natural and unlearned) fears is the fear of loud noises so he proceeded to make a loud noise each time he introduced one of Albert’s favorite objects, a white rat. After hearing the loud noise several times paired with the rat, Albert soon came to fear the rat and began to cry when it was introduced. Watson filmed Little Albert’s learning and used it to demonstrate that he could help parents achieve any outcomes they desired, if they would only follow his advice. Watson wrote columns in newspapers and in magazines and gained a lot of popularity among parents eager to apply science to household order. Parenting advice was not the legacy Watson left us, however. Where he really made his impact was in advertising. After Watson left academia, he went into the world of business and showed companies how to tie something that brings about a natural positive feeling to their products to enhance sales. Thus the union of sex and advertising! So, let’s use a much more interesting example than Pavlov’s dogs to check and see if you understand the difference between conditioned and unconditioned stimuli and responses. In the Little Albert example, identify the unconditioned stimulus, the unconditioned response, and, after conditioning, the conditioned stimulus and the conditioned response.

Operant Conditioning and Repeating Actions

Operant Conditioning is another learning theory that emphasizes a more conscious type of learning than that of classical conditioning. A person (or animal) does something (operates something) to see what effect it might bring. Simply said, operant conditioning describes how we repeat behaviors because they pay off for us.

B.F. Skinner (1904-1990) outlined the principles of operant conditioning. Skinner believed that we learn best when our actions are reinforced or, simply, followed by a desirable outcome. For example, a child who cleans his room and is reinforced (rewarded) with a big hug and words of praise is more likely to clean it again than a child whose deed goes unnoticed. Skinner believed that almost anything could be reinforcing.



Video 1.7.1: BF Skinner Foundation - Pigeon Turn

Positive and Negative Reinforcement

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, negative reinforcement has been used. Positive reinforcement refers to those instances where something is added that makes a behavior more likely, while negative reinforcement refers to those instances when something is subtracted (removed) that makes a behavior more likely.

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 a behavior; punishers (punishments) are used to stop behavior. A punisher is anything that follows an act and decreases the chance it will reoccur. But often a 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. Or 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. And punishment is stigmatizing; when punished, some start to see themselves as bad and give up trying to change. Just as reinforcement can be positive (something is added) or negative (something is taken away), the same is true for punishment. When a dog is yelled at for being bad, the dog is experiencing positive punishment.

Reinforcement can occur in a predictable way, such as after every desired action is performed, or intermittently, after the behavior is performed a number of times or the first time it is performed after a certain amount 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. A lover who is warmly regarded now and then may continue to seek out his or her partner's attention long after the partner has tried to break up. Think about the kinds of behaviors you may have learned through classical and operant conditioning. You may have learned many things in this way. But sometimes we learn very complex behaviors quickly and without direct reinforcement. Bandura explains how.

Social Learning Theory

Albert Bandura is a leading contributor to social learning theory. He calls our attention to the ways in which many of our actions are not learned through our own experiences; rather, they are learned by watching others (1977). Social learning or social cognitive theory recognizes the interaction of cognition (thinking), the environment, and behavior as determinants of development.



Young children frequently learn behaviors through imitation. Sometimes, particularly when we do not know what else to do, we learn by modeling or copying the behavior of others. An employee on their first day of a new job might eagerly look at how others are acting and try to act the same way to fit in more quickly. Adolescents struggling with their identity rely heavily on their peers to act as role-models. Couples often rely on roles they may have learned from their parents/caregivers and begin to act in ways they did not while dating and then wonder why their relationship has changed. Sometimes we do things because we've seen it pay off for someone else. They were operantly conditioned (reinforced or punished for their actions), but we engage in the behavior because we hope it will pay off for us as well. This is referred to as vicarious reinforcement (our tendency to repeat or duplicate behaviors for which others are being rewarded). Today, we are subject to a broad range of social influences as we not only learn what behaviors are beneficial (or not) from those we interact with, but from television, movies, the Internet, and an ever-expanding array of social media. Bandura (et al. 1963) began a series of studies to look at the impact of television, particularly commercials, have on the behavior of children. Are children more likely to act out aggressively when they see this behavior modeled? What if they see it being reinforced? Bandura began by conducting an experiment in which he showed children a film of a woman hitting an inflatable clown or "bobo" doll. Then, the children were allowed in the room where they found the doll and immediately began to hit it, as well. This was without any reinforcement whatsoever. Later, they viewed a woman hitting a real clown and sure enough, when allowed in the room, they too began to hit the clown! Not only that, but they found new ways to behave aggressively. It's as if they learned an aggressive role by watching it.



Video 1.7.2: Bandura's Bobo-Doll Experiment

Children view television and other media today than in the 1960s. Based on a study of a national representative sample of over 7,000 8-18-year-olds, the Kaiser Foundation reports that children spend just over 8 hours a day involved with media outside of schoolwork. This includes television or internet viewing on the computer. What are the implications of this? The prevalence of violence, aggression, overt sexual content, and messages promoting foods high in fat and sugar in the media are certainly cause for concern and the subjects of ongoing research and policy review.

Concept Check

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1.8: Introduction to Developmental Theories - Cognitive Theories

Piaget's Theory of Cognitive Development

The Swiss psychologist, Jean Piaget, proposed that children's thinking progresses through a series of four discrete stages. By "stages," he meant periods during which children reasoned similarly about many superficially different problems, with the stages occurring in a fixed order and the thinking within different stages differing in fundamental ways. Piaget believed that the timing of his stages was biologically defined - no amount of coaching could lead a child to progress more rapidly from one stage to the next.

The four stages that Piaget hypothesized were as follows:

- Sensorimotor (birth to 2 years) - knowing in this first stage is limited to sensing and doing
- Preoperational (2 to 6 or 7 years) - while no longer limited to the here and now, in this 2nd stage children do not understand that we all experience the world differently and exhibit various limits in their ability to reason
- Concrete Operational (6 or 7 to 11 or 12 years) - during Piaget's 3rd stage, the hallmarks of the preoperational stage are gone, but marked limits to problem-solving are evidence
- Formal Operational (11 or 12 years and throughout the rest of life) - Piaget believed his final stage was universal, a conclusion that we now know to be incorrect - as well as his belief that it was commonly achieved so early

During the sensorimotor stage, children's thinking is largely realized through their perceptions of the world and their physical interactions with it (think of an infant who puts an object in their mouth to explore it). Piaget believed that true thinking, mentally representing the world, was limited or absent. Consider Piaget's **object permanence** task, which is one of his most famous problems. If an infant younger than 9 months of age is playing with a favorite toy, and another person hides the toy from view by putting it under a cover and not letting the infant immediately reach for it, the infant is very likely to make no effort to retrieve it (because the infant thinks the toy just disappeared forever, like magic) and show no emotional distress (Piaget, 1954). This is not due to the infant being uninterested in the toy or unable to reach for it; they just think it is no longer there because they can not see it. If the same toy is put under a clear cover, infants below 9 months readily retrieve it (Munakata, McClelland, Johnson, & Siegler, 1997). Instead, Piaget claimed that infants less than 9 months do not understand that objects continue to exist even when out of sight (they lack "object permanence").

During the preoperational stage, according to Piaget, children can solve not only this simple problem (which they actually can solve after 9 months) but show a wide variety of other symbolic-representation capabilities, such as those involved in drawing and using language. However, such 2- to 7-year-olds tend to focus on a single dimension, even when solving problems would require them to consider multiple dimensions. This is evident in Piaget's (1952) **conservation** problems. For example, if a glass of water is poured into a taller, thinner glass, children below age 7 generally say that there now is more water than before. Similarly, if a clay ball is reshaped into a long, thin sausage, they claim that there is now more clay, and if a row of coins is spread out, they claim that there are now more coins. In all cases, the children are focusing on one dimension, while ignoring the changes in other dimensions (for example, the greater width of the glass and the clay ball). This focus on one dimension is a cognitive limit seen at this age known as "**centration**". Centration is one reason the preoperational child will fail a conservation task. Another is their inability to mentally reverse. While we can readily reason that the water that looks like more or less in a container of a new shape because we know it came from the original container, the preoperational child lacks that reasoning ability.

Children progress beyond the limits seen in the preoperational stage during the concrete operational stage, and think logically in most situations. However, according to Piaget, they still cannot think in systematic scientific ways, even when such thinking would be useful. Thus, if asked to find out which variables influence the period that a pendulum takes to complete its arc, and given weights that they can attach to strings in order to do experiments with the pendulum to find out, most children younger than age 12, perform biased experiments from which no conclusion can be drawn, and then conclude that whatever they originally believed is correct. For example, if a kid believed that weight was the only variable that mattered, that kid might put the heaviest weight on the shortest string and push it the hardest, and then conclude that just as they thought, weight is the only variable that matters (Inhelder & Piaget, 1958).

Finally, in the formal operations period, children attain the reasoning power of mature adults, which allows them to solve the pendulum problem and a wide range of other problems. We will explore Piaget in more detail later.

Although Piaget's theory has been very influential, it has not gone unchallenged. Many more recent researchers have obtained findings indicating that cognitive development is considerably more continuous than Piaget claimed. For example, Diamond (1985) found that on the object permanence task described above, infants show earlier knowledge if the waiting period is shorter. At age 6 months, they retrieve the hidden object if the wait is no longer than 2 seconds; at 7 months, they retrieve it if the wait is no longer than 4 seconds; and so on. Even earlier, at 3 or 4 months, infants show surprise in the form of longer looking times if objects suddenly appear to vanish with no obvious cause (Baillargeon, 1987). Similarly, children's specific experiences can greatly influence when developmental changes occur.

So, is cognitive development fundamentally continuous or fundamentally discontinuous? A reasonable answer seems to be, "It depends on how you look at it and how often you look." Thus, the debate between those who emphasize discontinuous, stage-like changes in cognitive development and those who emphasize gradual continuous changes remains a lively one.



Figure 1.8.1: Photo by [Ben Hershey](#) on [Unsplash](#)

Vygotsky: Changes in Thought with Guidance

Lev Vygotsky (1896-1934) was a Russian psychologist who wrote in the early 1900s but whose work was discovered in the United States in the 1960s but became more widely known in the 1980s. Vygotsky differed with Piaget in that he believed that a person not only has a set of abilities, but also a set of potential abilities that can be realized if given the proper guidance from others. His **sociocultural or sociocultural cognitive theory** emphasizes the importance of culture and interaction in the development of cognitive abilities. He believed that through guided participation known as scaffolding, with a teacher or capable peer, a child can learn cognitive skills within a certain range known as the **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 all through the process. You gave them assistance when they seemed to need it, but once they knew what to do-you stood back and let them go. This is called **scaffolding** and can be seen demonstrated throughout the world. This approach to teaching has also been adopted by educators. Rather than assessing students on what they are doing, they can be understood in terms of what they are capable of doing with the proper guidance. You can see how Vygotsky would be very popular with modern-day educators.



Figure 1.8.2: Photo by [Rachel](#) on [Unsplash](#)

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1.9: Introduction to Development Theories - Ecological, Ethological, and Eclectic

Our final three theories will offer more comprehensive ways of looking at development, approaches that seek to combine contexts, explain the origins of behaviors, and/or combine the two. Just as seeking to explain behaviors as nature or nurture is too simplistic, trying to account for any aspect of human behavior with a single theoretical perspective is likely to ignore important influences.

Ecological Systems Theory - Putting it All Together

Urie Bronfenbrenner (1917-2005) developed **Ecological Systems Theory**, which provides a framework for understanding and studying the many influences on human development (Bronfenbrenner, 1979). Bronfenbrenner recognized that human interaction is influenced by larger social forces and that an understanding of these forces is essential for understanding an individual. The individual is impacted by several systems including:

- **Microsystem:** *This includes the individual's setting and those who have direct, significant contact with the person, such as parents/caregivers or siblings and access (or not) to health care services.* The input of those 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.
- **Mesosystem:** *This includes the larger organizational structures, such as school, the family, or spirituality and how they interact with each other, which can indirectly affect the child.* These interactions can affect the child's self-image, growth, sense of accomplishment, and schedule thereby impacting the child, physically, cognitively, and emotionally.
- **Exosystem:** *This includes the larger contexts of community.* A community's local policies, social services, and media and can impact the organizational structures it houses.
- **Macrosystem:** *This includes the cultural elements such as attitudes in a culture, values, philosophies, and a society's responses to the global community.*
- **Chronosystem** *is the historical context in which these experiences occur.* This relates to different generational time periods such as what the baby boomer generation experiences while growing up and what millennials experiencing.

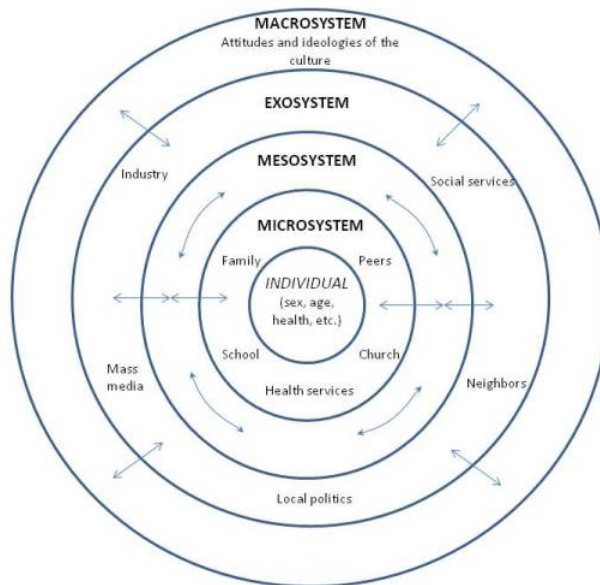


Figure 1.9.1: [Hchokr at English Wikipedia \(CC-BY-SA\)](#)

In sum, a child's experiences are shaped by larger forces such as family, schools, access (or not) to resources, culture, and time period. Bronfenbrenner's model helps us understand all of the different environments that impact each one of us, simultaneously.

Ethological

Ethology is the biological study of behavior and is closely related to evolutionary biology, which explores the evolutionary reasons for behavior. In ethology we find the intersection of animal and human behavior, with connections established between biological instincts and some of our most seemingly human drives. This is most clearly demonstrated in the area of attachment. Many species

will imprint on a potential caretaker - presuming that first visual contact to be "mom" and then literally following that "mom" - whether it be an individual of a different species or a toy. We see ethology here as there is clearly a biological drive that causes this behavior and evolution here as that caregiver is necessary for the survival of the individual and the species. As we will discuss later, this imprinting on a caregiver translates into human attachment and may have a lasting impact on relationships throughout life.



Figure 1.9.2: Konrad Lorenz. (2014). FamousPsychologists.org. Retrieved 04:07, September 6, 2020 from <https://www.famouspsychologists.org/konrad-lorenz/>

Eclectic

As we have explored, we have diverse theories that seek to explain different components of development. An eclectic approach borrows from the various theories - combining approaches as needed. A theorist with an eclectic approach might consider attachment to be a product of a biological drive that is further modified by experience (learning) and ultimately establishes a sense of trust or mistrust in the world (psychosocial).

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1.10: Introduction to Lifespan Development - Final Notes

You should now have a foundation for the various views we will consider throughout this course as we progress through the lifespan. As each life stage depends on what came before and impacts what happens after, it is important to keep in mind that you should be able to see the connections between the stages. With that in mind, we offer the table below that demonstrates how the various stage theories relate to one another. Depending on what age we are considering, you'll find that certain theories are more relevant at certain ages. In the early years, for example, where thinking is just developing, Piaget will take center stage. In later years, Erikson and other theories not yet presented will be more important. But before we dive into the 1st stage of life, we must first explore how we know what we know - the methods used to inform our understanding of the lifespan.

Ages, Periods of Development, and Stage Theories (All ages are approximated)

Age	Period	Erikson's Psychosocial Task	Freud's Psychosexual Stage	Piaget's Cognitive Stage
0–1	Infancy	Trust vs. Mistrust	Oral	Sensorimotor
1–3	Infancy/Toddlerhood	Autonomy vs. Shame/Doubt	Anal	Sensorimotor (0-2) Preoperational (2-7)
3–6	Early Childhood	Initiative vs. Guilt	Phallic	Preoperational
7–11	Middle Childhood	Industry vs. Inferiority	Latency	Concrete Operational
12–18	Adolescence	Identity vs. Role Confusion	Genital	Formal Operational
19–30s	Emerging/Early Adulthood	Intimacy vs. Isolation		
40–64	Middle Adulthood	Generativity vs. Stagnation		
65–	Late Adulthood	Integrity vs. Despair		



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CHAPTER OVERVIEW

2: Research Methods in Lifespan Development

- [2.1: Research Methods in Lifespan Development - What Will You Learn?](#)
- [2.2: How Do We Know What We Know?](#)
- [2.3: Research Methods in Psychology](#)
- [2.4: Experimentation](#)
- [2.5: Studying Infants and Children](#)
- [2.6: Approaches to Studying Change Over Time](#)
- [2.7: Challenges Associated with Conducting Developmental Research](#)

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2.1: Research Methods in Lifespan Development - What Will You Learn?



Developmental psychologists expand our understanding of human development by asking questions of non-human animals - and humans of all ages. How do we ask questions of an infant monkey - or a newborn human? This image of an infant monkey nursing has been chosen as it relates to an important topic in development and a specific series of studies. The topic is attachment - the bond that forms between an infant and a caregiver. We'll discuss how attachment has been studied in animals (primarily, studies of contact comfort in infant monkeys like the one shown here), how the quality of the attachment is measured in children (using what we call the "strange situation"), and whether or not early attachment has been shown to

relate to how we turn out later in life.

Photo by [Malthi Baddela](#) on [Unsplash](#)

After reading "Research Methods in Lifespan Development ", you should be able to:

1. Discuss the various methods used to study development across the lifespan, noting the strengths and weaknesses of each approach.
2. Explain what conclusions can and can't be made when using correlational data.
3. Recognize the elements of an experiment.
4. Identify the challenges associated with conducting developmental research.



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2.2: How Do We Know What We Know?

An important 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. Science 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 write down two things that you know about childhood...Okay. Now, how do you know? Chances are you know these things based on your own history (experiential reality) or based on what others have told you or cultural ideas (agreement reality) (Seccombe and Warner, 2004). There are several problems with personal inquiry. Read the following sentence aloud:

Paris in the
the spring

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

Paris in the
the spring

If you read it differently the second time (adding the second “the”) you just experienced one of the problems with 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. This problem may just be a result of cognitive ‘blindness’ 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. It has been 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 a 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 you should always ask how the sample was obtained and keep this in mind when interpreting results.

The Scientific Method

The goal of all scientists is to better understand the world around them. Psychologists focus their attention on understanding behavior, as well as the cognitive (mental) and physiological (body) processes that underlie behavior. In contrast to other methods that people use to understand the behavior of others, such as intuition and personal experience, the hallmark of scientific research is that there is evidence to support a claim. Scientific knowledge is **empirical**: It is grounded in objective, tangible evidence that can be observed time and time again, regardless of who is observing.

While behavior is observable, the mind is not. If someone is crying, we can see behavior. However, the reason for the behavior is more difficult to determine. Is the person crying due to being sad, in pain, or happy? Sometimes we can learn the reason for

someone's behavior by simply asking a question, like "Why are you crying?" However, there are situations in which an individual is either uncomfortable or unwilling to answer the question honestly, or is incapable of answering. For example, infants would not be able to explain why they are crying. In such circumstances, the psychologist must be creative in finding ways to better understand behavior.

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.

We've 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 extremely important 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.

What makes a science a science is the use of the scientific method. A scientific investigation commonly involves the following steps:

- Determining a research question
- Reviewing previous studies addressing the topic in question (known as a literature review)
- Determining a method of gathering information
- Conducting the study
- Interpreting results
- Drawing conclusions; stating limitations of the study and suggestions for future research
- Making your findings available to others (both to share information and to have your work scrutinized by others)

Your findings can then be used by others as they explore the area of interest and through this process a literature or knowledge base is established. This model of scientific investigation presents research as a linear process guided by a specific research question. And it typically involves quantifying or using statistics to understand and report what has been studied. Many academic journals publish reports on studies conducted in this manner and a good way to become more familiar with these steps is to look at journal articles which will be written in sections that follow these steps.

Another model of research referred to as qualitative research may involve steps such as these:

- Begin with a broad area of interest
- Gain entrance into a group to be researched
- Gather field notes about the setting, the people, the structure, the activities or other areas of interest
- Ask open-ended, broad "grand tour" types of questions when interviewing subjects
- Modify research questions as the study continues
- Note patterns or consistencies
- Explore new areas deemed important by the people being observed
- Report findings

In this type of research, theoretical ideas are "grounded" in the experiences of the participants. The researcher is the student and the people in the setting are the teachers as they inform the researcher of their world (Glazer & Strauss, 1967). Researchers are to be aware of their own biases and assumptions, acknowledge them and bracket them in efforts to keep them from limiting accuracy in reporting. Sometimes qualitative studies are used initially to explore a topic and more quantitative studies are used to test or explain what was first described.

Types of Studies

Descriptive

Not all studies are designed to reach the same goal. **Descriptive studies** focus on describing an occurrence. Some examples of descriptive questions include:

- “How much time do parents spend with children?”
- “How many times per week do couples have intercourse?”
- “When is marital satisfaction greatest?”

Explanatory

Explanatory studies are efforts to answer the question “why” such as:

- “Why have rates of divorce leveled off?”
- “Why are teen pregnancy rates down?”

Evaluation Research

Evaluation research is designed to assess the effectiveness of policies or programs. For instance, research might be designed to study the effectiveness of safety programs implemented in schools for installing car seats or fitting bicycle helmets. Do children wear their helmets? Do parents use car seats properly? If not, why not?

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2.3: Research Methods in Psychology

There are many research methods available to psychologists in their efforts to understand, describe, and explain behavior and the that underlie it. 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. We'll begin our exploration of the research methods used in the study of lifespan development by considering the methods used by psychologists more generally.

Each of these research methods has unique strengths and weaknesses, and each method may only be appropriate for certain types of research questions. For example, studies that rely primarily on observation produce incredible amounts of information, but the ability to apply this information to the larger population is somewhat limited because of small sample sizes. Survey research, on the other hand, allows researchers to easily collect data from relatively large samples. While this allows for results to be generalized to the larger population more easily, the information that can be collected on any given survey is somewhat limited and subject to problems associated with any type of self-reported data. Some researchers conduct archival research by using existing records. While this can be a fairly inexpensive way to collect data that can provide insight into a number of research questions, researchers using this approach have no control on how or what kind of data was collected. Observational and descriptive methods are correlational in nature. This means that researchers can speak to important relationships that might exist between two or more variables of interest. However, correlational data cannot be used conclude that a causal connection exists.

An experiment is the only method that can confirm that a relationship between variables is due to a cause and effect connection. In experimental research, which will be discussed later in this chapter, there is a tremendous amount of control over the variables of interest. While this is a powerful approach, experiments are often conducted in very artificial settings. This calls into question the validity of experimental findings with regard to how they would apply in real-world settings. If an experiment is "valid", that means it is measuring what it is designed to measure. In addition, many of the questions that psychologists would like to answer cannot be pursued through experimental research because of ethical concerns.

Case Studies

In 2011, the *New York Times* published a feature story on Krista and Tatiana Hogan, Canadian twin girls. These particular twins are unique because Krista and Tatiana are conjoined twins, connected at the head. There is evidence that the two girls are connected in a part of the brain called the thalamus, which is a major sensory relay center. Most incoming sensory information is sent through the thalamus before reaching higher regions of the cerebral cortex for processing.

The implications of this potential connection mean that it might be possible for one twin to experience the sensations of the other twin. For instance, if Krista is watching a particularly funny television program, Tatiana might smile or laugh even if she is not watching the program. This particular possibility has piqued the interest of many neuroscientists who seek to understand how the brain uses sensory information.

These twins represent an enormous resource in the study of the brain, and since their condition is very rare, it is likely that as long as their family agrees, scientists will follow these girls very closely throughout their lives to gain as much information as possible (Dominus, 2011).

In observational research, scientists would be conducting a case study if they were to focus on one person or just a few individuals. Indeed, some scientists spend their entire careers studying just 10–20 individuals. Why would they do this? Obviously, when they focus their attention on a very small number of people, they can gain a tremendous amount of insight into those cases. The richness of information that is collected in clinical or case studies is unmatched by any other single research method. This allows the researcher to have a very deep understanding of the individuals and the particular phenomenon being studied.

If case studies provide so much information, why are they not more frequent among researchers? As it turns out, the major benefit of this particular approach is also a weakness. As mentioned earlier, this approach is often used when studying individuals who are interesting to researchers because they have a rare characteristic. Therefore, the individuals who serve as the focus of case studies are not like most other people. If scientists ultimately want to explain all behavior, focusing attention on such a special group of people can make it difficult to generalize any observations to the larger population as a whole. **Generalizing** refers to the ability to

apply the findings of a particular research project to larger segments of society. Again, case studies provide enormous amounts of information, but since the cases are so specific, the potential to apply what's learned to the average person may be very limited.

Naturalistic Observation

If you want to understand how behavior occurs, one of the best ways to gain information is to simply observe the behavior in its natural context. However, people might change their behavior in unexpected ways if they know they are being observed. How do researchers obtain accurate information when people tend to hide their natural behavior? As an example, imagine that your professor asks everyone in your class to raise their hand if they always wash their hands after using the restroom. Chances are that almost everyone in the classroom will raise their hand, but do you think hand washing after every trip to the restroom is really that universal?

This is very similar to the phenomenon mentioned earlier in this chapter: many individuals do not feel comfortable answering a question honestly. But if we are committed to finding out the facts about hand washing, we have other options available to us.

Suppose we send a classmate into the restroom to actually watch whether everyone washes their hands after using the restroom. Will our observer blend into the restroom environment by wearing a white lab coat, sitting with a clipboard, and staring at the sinks? We want our researcher to be inconspicuous—perhaps standing at one of the sinks pretending to put in contact lenses while secretly recording the relevant information. This type of observational study is called **naturalistic observation**: observing behavior in its natural setting. To better understand peer exclusion, Suzanne Fanger collaborated with colleagues at the University of Texas to observe the behavior of preschool children on a playground. How did the observers remain inconspicuous over the duration of the study? They equipped a few of the children with wireless microphones (which the children quickly forgot about) and observed while taking notes from a distance. Also, the children in that particular preschool (a “laboratory preschool”) were accustomed to having observers on the playground (Fanger, Frankel, & Hazen, 2012).

It is critical that the observer be as unobtrusive and as inconspicuous as possible: when people know they are being watched, they are less likely to behave naturally. If you have any doubt about this, ask yourself how your driving behavior might differ in two situations: In the first situation, you are driving down a deserted highway during the middle of the day; in the second situation, you are being followed by a police car down the same deserted highway.



Figure 2.3.1: Seeing a police car behind you would probably affect your driving behavior. (Public Domain; [Julius Jansson](#) via [Unsplash](#))

It should be pointed out that naturalistic observation is not limited to research involving humans. Indeed, some of the best-known examples of naturalistic observation involve researchers going into the field to observe various kinds of animals in their own environments. As with human studies, the researchers maintain their distance and avoid interfering with the animal subjects so as not to influence their natural behaviors. Scientists have used this technique to study social hierarchies and interactions among animals ranging from ground squirrels to gorillas. The information provided by these studies is invaluable in understanding how those animals organize socially and communicate with one another. The anthropologist Jane **Goodall**, for example, spent nearly five decades observing the behavior of chimpanzees in Africa. As an illustration of the types of concerns that a researcher might encounter in naturalistic observation, some scientists criticized Goodall for giving the chimps names instead of referring to them by

numbers—using names was thought to undermine the emotional detachment required for the objectivity of the study (McKie, 2010).



Figure 2.3.2: (a) Jane Goodall made a career of conducting naturalistic observations of (b) chimpanzee behavior. (credit “Jane Goodall”: modification of work by Erik Hersman; “chimpanzee”: modification of work by “Afrika Force”/Flickr.com)

The greatest benefit of naturalistic observation is the **validity**, or accuracy, of information (also referred to as data) collected without interference in a natural setting. Having individuals behave as they normally would in a given situation means that we have a higher degree of ecological validity, or realism, than we might achieve with other research approaches. Therefore, our ability to generalize the findings of the research to real-world situations is enhanced. If done correctly, we need not worry about people or animals modifying their behavior simply because they are being observed. Sometimes, people may assume that reality programs give us a glimpse into authentic human behavior. However, the principle of inconspicuous observation is violated as reality stars are followed by camera crews and are interviewed on camera for personal confessionals. Given that environment, we must doubt how natural and realistic their behaviors are.

The major downside of naturalistic observation is that they are often difficult to set up and control. In our restroom study, what if you stood in the restroom all day prepared to record people’s hand washing behavior and no one came in? Or, what if you have been closely observing a troop of gorillas for weeks only to find that they migrated to a new place while you were sleeping in your tent? The benefit of realistic data comes at a cost. As a researcher you have no control of when (or if) you have behavior to observe. In addition, this type of observational research often requires significant investments of time, money, and a good dose of luck.

Sometimes studies involve structured observation. In these cases, people are observed while engaging in set, specific tasks. An excellent example of structured observation comes from Strange Situation by Mary Ainsworth (you will read more about this later). The Strange Situation is a procedure used to evaluate attachment styles that exist between an infant and caregiver. In this scenario, caregivers bring their infants into a room filled with toys. The Strange Situation involves a number of phases, including a stranger coming into the room, the caregiver leaving the room, and the caregiver’s return to the room. The infant’s behavior is closely monitored at each phase, but it is the behavior of the infant upon being reunited with the caregiver that is most telling in terms of characterizing the infant’s attachment style with the caregiver.

Another potential problem in observational research is **observer bias**. Generally, people who act as observers are closely involved in the research project and may unconsciously skew their observations to fit their research goals or expectations. To protect against this type of bias, researchers should have clear criteria established for the types of behaviors recorded and how those behaviors should be classified. In addition, researchers often compare observations of the same event by multiple observers, in order to test **inter-rater reliability**: a measure of reliability that assesses the consistency of observations by different observers.

Surveys

Often, psychologists develop surveys as a means of gathering data. **Surveys** are lists of questions to be answered by research participants, and can be delivered as paper-and-pencil questionnaires, administered electronically, or conducted verbally. Generally, the survey itself can be completed in a short time, and the ease of administering a survey makes it easy to collect data from a large number of people.

Surveys allow researchers to gather data from larger samples than may be afforded by other research methods. A **sample** is a subset of individuals selected from a **population**, which is the overall group of individuals that the researchers are interested in. Researchers study the sample and seek to generalize their findings to the population.

There is both strength and weakness of the survey in comparison to case studies. By using surveys, we can collect information from a larger sample of people. A larger sample is better able to reflect the actual diversity of the population, thus allowing better generalizability. Therefore, if our sample is sufficiently large and diverse, we can assume that the data we collect from the survey can be generalized to the larger population with more certainty than the information collected through a case study. However, given the greater number of people involved, we are not able to collect the same depth of information on each person that would be collected in a case study.

Another potential weakness of surveys is something we touched on earlier in this chapter: People don't always give accurate responses. They may lie, misremember, or answer questions in a way that they think makes them look good. For example, people may report drinking less alcohol than is actually the case.

Any number of research questions can be answered through the use of surveys. One real-world example is the research conducted by Jenkins, Ruppel, Kizer, Yehl, and Griffin (2012) about the backlash against the US Arab-American community following the terrorist attacks of September 11, 2001. Jenkins and colleagues wanted to determine to what extent these negative attitudes toward Arab-Americans still existed nearly a decade after the attacks occurred. In one study, 140 research participants filled out a survey with 10 questions, including questions asking directly about the participant's overt prejudicial attitudes toward people of various ethnicities. The survey also asked indirect questions about how likely the participant would be to interact with a person of a given ethnicity in a variety of settings (such as, "How likely do you think it is that you would introduce yourself to a person of Arab-American descent?"). The results of the research suggested that participants were unwilling to report prejudicial attitudes toward any ethnic group. However, there were significant differences between their pattern of responses to questions about social interaction with Arab-Americans compared to other ethnic groups: they indicated less willingness for social interaction with Arab-Americans compared to the other ethnic groups. This suggested that the participants harbored subtle forms of prejudice against Arab-Americans, despite their assertions that this was not the case (Jenkins et al., 2012).

Archival Research

Some researchers gain access to large amounts of data without interacting with a single research participant. Instead, they use existing records to answer various research questions. This type of research approach is known as **archival research**. Archival research relies on looking at past records or data sets to look for interesting patterns or relationships.

For example, a researcher might access the academic records of all individuals who enrolled in college within the past ten years and calculate how long it took them to complete their degrees, as well as course loads, grades, and extracurricular involvement. Archival research could provide important information about who is most likely to complete their education, and it could help identify important risk factors for struggling students.



(a)



(b)

Figure 2.3.3: A researcher doing archival research examines records, whether archived as a (a) hardcopy or (b) electronically. (credit "paper files": modification of work by "Newtown graffiti"/Flickr; "computer": modification of work by INPVIC Family/Flickr)

In comparing archival research to other research methods, there are several important distinctions. For one, the researcher employing archival research never directly interacts with research participants. Therefore, the investment of time and money to collect data is considerably less with archival research. Additionally, researchers have no control over what information was originally collected. Therefore, research questions have to be tailored so they can be answered within the structure of the existing data sets. There is also no guarantee of consistency between the records from one source to another, which might make comparing and contrasting different data sets problematic.

Did you know that as sales in 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 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 it would be pretty foolish to decide that 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 cool 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?

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 relationships 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.

The sign—positive or negative—of the correlation coefficient indicates the direction of the relationship. 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.

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.

As mentioned earlier, correlations have predictive value. Imagine that you are on the admissions committee of a major university. You are faced with a huge 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 relative success of those students who have applied for admission into the university.

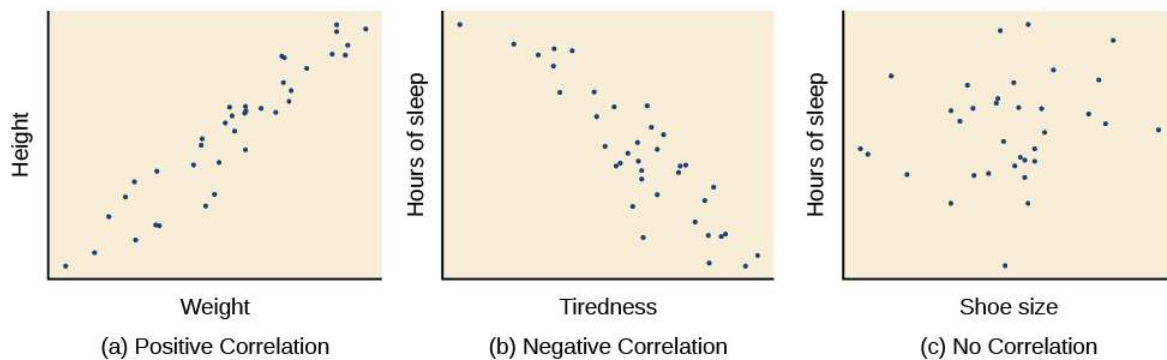


Figure 2.3.4: Scatterplots are a graphical view of the strength and direction of correlations. The stronger the correlation, the closer the data points are to a straight line. In these examples, we see that there is (a) a positive correlation between weight and height, (b) a negative correlation between tiredness and hours of sleep, and (c) no correlation between shoe size and hours of sleep.

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 major 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.



Figure 2.3.5: Does eating cereal really cause someone to be a healthy weight? (credit: Tim Skillern)

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 2.3.6: 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).

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2.4: Experimentation

The only way to establish that there is a cause-and-effect relationship between two variables is to conduct a scientific experiment. The word "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 hair style or a new food. However, in the scientific context, an experiment has precise requirements for design and implementation.

The Experimental Hypothesis

In order to conduct an experiment, a researcher must have a specific hypothesis to be tested. A hypothesis is often described as an "educated guess" - a proposed explanation that, ideally, can be tested. 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.

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 rigorously test our hypothesis. 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. The experimental manipulation is also referred to as the **independent variable**. 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 if any observed difference is found to be statistically significant.

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. The effect that we measure is referred to as the **dependent variable**. 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 precisely define, or operationalize, what is considered violent and nonviolent. An **operational definition** is a description of how we will measure our dependent variable, and it is important in allowing others 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 is recorded.

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. In other words, those how are doing the measuring should be "blind" to which group the subject was in. **Experimenter** bias refers to the possibility that a researcher's expectations might impact 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 one of the groups (participants) are unaware as to which group they are in (experiment or control group) while the researcher who developed the experiment 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.

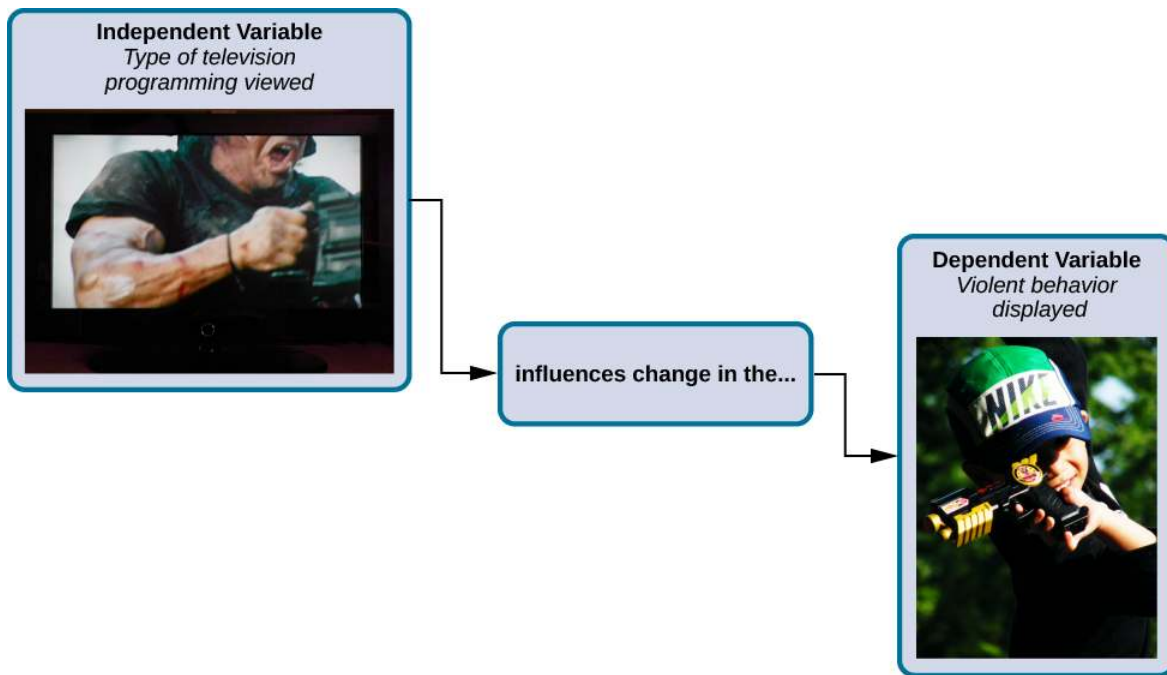
To make sure that any effects on mood are due to the drug and not due to expectations, the control group receives a placebo (in this case a sugar pill). Now everyone gets a pill, and once again neither the researcher nor the experimental participants know who got the drug and who got the sugar pill. 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.



Providing the control group with a placebo treatment protects against bias caused by expectancy. (credit: Elaine and Arthur Shapiro)

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. 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.



In an experiment, manipulations of the independent variable are expected to result in changes in the dependent variable. (credit “automatic weapon”: modification of work by Daniel Oines; credit “toy gun”: modification of work by Emran Kassim)

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?

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. 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 who 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.



(a)



(b)

Researchers may work with (a) a large population or (b) a sample group that is a subset of the larger population. (credit “crowd”: modification of work by James Cridland; credit “students”: modification of work by Laurie Sullivan)

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 very unlikely 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.

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 gender, age, height, or income has on spatial memory, happiness, or weight. Gender, age, height, and income are not variables that can be manipulated. In other words, these are things that can't be independent variables and, consequently, can't be studied experimentally.

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.

Reliability and Validity [Edit section](#)

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.

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 Element-25-Frame" class="MathJax" style="position: relative;" role="presentation" data-mathml="<math xmlns="http://www.w3.org/1998/Math/MathML"><mn>150</mn><mi>mathvariant="normal">%</mi></math>">Span-102" class="math">Span-103" class="mrow">Span-104" class="mn">150Span-105" class="mi">% (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).

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2.5: Studying Infants and Children

What do infants know about the world in which they live – and how do they grow and change with age? These are the kinds of questions answered by developmental scientists. In this reading, we will explore different research techniques that are used to study psychological phenomena in infants and children, research designs that are used to examine age-related changes in development, and unique challenges and special issues associated with conducting research with infants and children. Lifespan psychology is a fascinating field of study, and many interesting questions remain to be examined by future generations of developmental scientists – maybe you will be among them!

Here is a scenario: A group of children were playing hide-and-seek in the yard. Pilar raced to her hiding spot as her six-year-old cousin, Lucas, loudly counted, “... six, seven, eight, nine, ten! Ready or not, here I come!”. Pilar let out a small giggle as Lucas ran over to find her – in the exact location where he had found his sister a short time before. At first glance, this behavior is puzzling: why would Pilar hide in exactly the same location where someone else was just found? Whereas older children and adults realize that it is likely best to hide in locations that have not been searched previously, young children do not have the same cognitive sophistication. But why not... and when do these abilities first develop?

Children's games are more than just fun. They can be opportunities for researchers to learn about how children think, feel, and behave. In the image below, a hiding child looks out with excitement - exhibiting a child's pleasure is a game of hide-and-seek.



"Found a New Hiding Place | Matt | Flickr" is licensed under [CC BY-NC-SA 4.0](#)

Lifespan and developmental psychologists investigate questions like these using research methods that are tailored to the particular capabilities of the infants and children being studied. Importantly, research in developmental psychology is more than simply examining how children behave during games of hide-and-seek – the results obtained from developmental research have been used to inform best practices in parenting/caregiving, education, and policy.

Infants and children—especially younger children—can not always be studied using the same research methods used in studies with adults. Researchers, therefore, have developed many creative ways to collect information about infant and child psychology, as it relates to their development. In this section, we highlight some of the methods that have been used by researchers who study infants and older children, separating them into three distinct categories: **involuntary or obligatory responses, voluntary responses, and psychophysiological responses**. We will also discuss other methods such as the use of **surveys and questionnaires**. At the end of this section, there will be an example of how interview techniques can be used to study the beliefs and perceptions of older children and adults – a method that cannot be used with infants or very young children.

Involuntary or Obligatory Responses

One of the primary challenges in studying very young infants is that they have limited motor control– they cannot hold their heads up for short amounts of time, much less grab an interesting toy, play the piano, or turn a doorknob. As a result, infants cannot

actively engage with the environment in the same way as older children and adults. For this reason, developmental scientists have designed research methods that assess involuntary or obligatory responses. These are behaviors in which people engage without much conscious thought or effort. For example, think about the last time you heard your name at a party or gathering – you likely turned your head to see who was talking without even thinking about it. Infants and young children also demonstrate involuntary responses to stimuli in the environment. When infants hear the voice of their primary caregiver, for instance, their heart rate increases – whereas if they hear the voice of a stranger, their heart rate decreases (Kisilevsky et al., 2003). Researchers study involuntary behaviors to better understand what infants know about the world around them. Even when infants are so young that they have very little motor control, researchers can measure physiological responses and record involuntary responses, such as an infant's eye movements, to get valuable insight into what they understand about the world around them.



Medical professionals measure the vital signs of a neonate.

Photo by [Solen Feyissa](#) on [Unsplash](#)

One research method that capitalizes on involuntary or obligatory responses is a procedure known as **habituation**. In habituation studies, infants are presented with a stimulus such as a photograph of a face over and over again until they become bored with it. When infants become bored, they look away from the picture. If infants are then shown a new picture--such as a photograph of a different face-- their interest returns and they look at the new picture. This is a phenomenon known as **dishabituation**. Habituation procedures work because infants generally look longer at novel stimuli relative to items that are familiar to them. This research technique takes advantage of involuntary or obligatory responses because infants are constantly looking around and observing their environments; they do not have to be taught to engage with the world in this way.

One classic habituation study was conducted by Baillargeon and colleagues (1985). These researchers were interested in the concept of **object permanence**, or the understanding that objects exist even when they cannot be seen or heard. Object permanence, according to Piaget, is lacking during the sensorimotor stage. While you know your toothbrush exists even though you are probably not able to see it right this second, the infant that lacks object permanence seems to not know that its mom is still there when she covers her face with her hands when playing peekaboo . To investigate object permanence in 5-month-old infants, researchers used a **violation of expectation paradigm** (a research method in which infants are expected to respond in a particular way because one of two conditions violates or goes against what they should expect based on their everyday experiences). For example, it violates our expectations that the cartoon character, Wile E. Coyote, runs off a cliff but does not immediately fall to the ground below. In this study, the researchers first habituated infants to a screen that moved back and forth like a drawbridge. Once the infants were bored with the moving screen, they were shown two different scenarios to test their understanding of physical events. In both of these test scenarios, a box was placed behind the moving screen. What differed between these two scenarios, however, was whether they confirmed or violated the **solidity principle** – The idea that two solid masses should not be able to move through one another. In the **possible scenario**, infants watched as the moving drawbridge stopped when it hit the box (as would be expected based on the solidity principle). In the **impossible scenario**, the drawbridge appeared to move right through the space that was occupied by the box! This impossible scenario violates the solidity principle in the same way as if you got out of your chair and walked through a wall, reappearing on the other side.

The results of this study revealed that infants looked longer at the impossible test event than at the possible test event. The authors suggested that the infants reacted in this way because they were surprised – the demonstration went against their expectation that two solids cannot move through one another. The findings indicated that 5-month-old infants understood that the box continued to exist even when they could not see it. Subsequent studies indicated that 3½- and 4½-month-old infants also demonstrate object

permanence under similar test conditions (Baillargeon, 1987). These findings are notable because they suggest that infants understand object permanence much earlier than had been reported previously in research examining voluntary responses, although this remains to be a topic of debate among researchers.

Voluntary Responses



"Tomatoes" by Ikayama is licensed under CC BY-NC-SA 4.0

Filling your basket at the supermarket is an example of a voluntary response behavior. The choices you make are under your control.

As infants and children age, researchers are increasingly able to study their understanding of the world through their **voluntary responses**. Voluntary responses are behaviors that a person completes by choice. For example, think about how you act when you go to the grocery store: you select whether to use a shopping cart or a basket, you decide which sections of the store to walk through, and you choose whether to stick to your grocery list or splurge on a treat. Importantly, these behaviors are completely up to you (and are under your control). Although they do not do a lot of grocery shopping, infants and children also have voluntary control over their actions. Children, for instance, choose which toys to play with.

Researchers study the voluntary responses of infants and young children in many ways. For example, lifespan and developmental scientists study recall memory in infants and young children by looking at voluntary responses. **Recall memory** is memory of past events or episodes, such as what you did yesterday afternoon or on your last birthday. Whereas, older children and adults are simply asked to talk about their past experiences, recall memory has to be studied in a different way in infants and very young children who cannot discuss the past using language. To study memory in these participants researchers use a behavioral method known as **elicited imitation** (Lukowski & Milojevich, in press).

In the elicited imitation procedure, infants play with toys that are designed in the lab to be unlike the kinds of things infants usually have at home. These toys (or **event sequences**, as researchers call them) can be put together in a certain way to produce an outcome that infants commonly enjoy. One of these events is called **Find the Surprise**. As shown in Figure 1, this toy has a door on the front that is held in place by a latch – and a small plastic figure is hidden on the inside. During the first part of the study, infants play with the toy in whichever way they want for a few minutes. The researcher then shows the infant how make the toy work by (1) flipping the latch out of the way and (2) opening the door, revealing the plastic toy inside. The infant is allowed to play with the toy again either immediately after the demonstration or after a longer delay. As the infant plays, the researcher records whether the infant finds the surprise using the same procedure that was demonstrated.



Figure 1. The two-step event sequence Find the Surprise. The picture on the left shows all of the toys needed to complete the event. The picture in the middle shows a hand flipping the latch out of the way so the door can be opened (step 1). The picture on the right shows a hand opening the door, ultimately revealing a plastic figurine hidden inside (step 2). These images are from a larger figure initially published in Lukowski and Milojevich (2013) (reprinted with permission).

Use of the elicited imitation procedure has taught developmental scientists a lot about how recall memory develops. For example, we now know that 6-month-old infants remember one step of a 3-step sequence for 24 hours (Barr, Dowden, & Hayne, 1996; Collie & Hayne, 1999). Nine-month-olds remember the individual steps that make up a 2-step event sequence for 1 month, but only 50% of infants remember to do the first step of the sequence before the second (Bauer, Wiebe, Carver, Waters, & Nelson, 2003; Bauer, Wiebe, Waters, & Bangston, 2001; Carver & Bauer, 1999). When children are 20 months old, they remember the individual steps and temporal order of 4-step events for at least 12 months – the longest delay that has been tested to date (Bauer, Wenner, Dropik, & Wewerka, 2000).

Psychophysiology

Behavioral studies have taught us important information about what infants and children know about the world. Research on behavior alone, however, cannot tell scientists how brain development or biological changes impact (or are impacted by) behavior. For this reason, researchers may also record psychophysiological data, such as measures of heart rate, hormone levels, or brain activity. These measures may be recorded by themselves or in combination with behavioral data to better understand the bi-directional relations between biology and behavior.



Figure: Special equipment has been developed to allow researchers to record the brain activity of very young and very small research subjects. In this image, an infant wears a cap that is covered with sensors to record its brain activity. (CC BY-NC-SA 4.0; Matt Cain via Flickr)

One manner of understanding associations between brain development and behavioral advances is through the recording of **event-related potentials**, or ERPs. ERPs are recorded by fitting a research participant with a stretchy cap that contains many small sensors or electrodes. These electrodes record tiny electrical currents on the scalp of the participant in response to the presentation of particular stimuli, such as a picture or a sound (for additional information on recording ERPs from infants and children, see DeBoer, Scott, & Nelson, 2005). The recorded responses are then amplified thousands of times using specialized equipment so that they look like squiggly lines with peaks and valleys. Some of these brain responses have been linked to psychological phenomena. For example, researchers have identified a negative peak in the recorded waveform that they have called the N170 (Bentin, Allison, Puce, Perez, & McCarthy, 2010). The peak is named in this way because it is negative (hence the N) and because it occurs about 140ms to 170ms after a stimulus is presented (hence the 170). This peak is particularly sensitive to the presentation of faces, as it is commonly more negative when participants are presented with photographs of faces rather than with photographs of objects. In this way, researchers are able to identify brain activity associated with real world thinking and behavior.

The use of ERPs has provided important insight as to how infants and children understand the world around them. In one study (Webb, Dawson, Bernier, & Panagiotides, 2006), researchers examined face and object processing in children with autism spectrum disorders, those with developmental delays, and those who were typically developing. The children wore electrode caps and had their brain activity recorded as they watched still photographs of faces (of their mother or of a stranger) and objects (including those that were familiar or unfamiliar to them). The researchers examined differences in face and object processing by group by observing a component of the brainwave they called the prN170 (because it was believed to be a precursor to the adult N170). Their results showed that the height of the prN170 peak (commonly called the **amplitude**) did not differ when faces or objects were presented to typically developing children. When considering children with autism, however, the peaks were higher when objects were presented relative to when faces were shown. Differences were also found in how long it took the brain to reach the negative peak (commonly called the **latency** of the response). Whereas the peak was reached more quickly when typically developing children were presented with faces relative to objects, the opposite was true for children with autism. These findings suggest that children with autism are, in some way, processing faces differently than typically developing children (and, as reported in the manuscript, children with more general developmental delays).

Parent-report questionnaires

Lifespan and Developmental science has come a long way in assessing various aspects of infant and child development through behavior and psychophysiology – and new advances are happening every day. In many ways, however, the very youngest of research participants are still quite limited in the information they can provide about their own development. As such, researchers often ask the people who know infants and children best – commonly, their parents/caregivers – to complete surveys or

questionnaires about various aspects of their lives. These parent/caregiver-report data can be analyzed by themselves or in combination with any collected behavioral or psychophysiological data.



"DSC01065_1" by Jerry Lai is licensed under [CC BY-NC-SA 4.0](#)

Parents spend countless hours together with children observing their behavior. Lifespan and Developmental psychologists sometimes use surveys to collect information from parents/caregivers that can be used to answer important research questions.

One commonly used parent/caregiver-report questionnaire is the **Child Behavior Checklist** (CBCL; Achenbach & Rescorla, 2000). Parents/caregivers complete the preschooler version of this questionnaire by answering questions about child strengths, behavior problems, and disabilities, among other things (**sample Child Behavior Checklist questions**). The responses provided by parents/caregivers are used to identify whether the child has any behavioral issues, such as sleep difficulties, aggressive behaviors, depression, or attention deficit/hyperactivity problems.

A recent study used the CBCL-Preschool questionnaire (Achenbach & Rescorla, 2000) to examine preschooler functioning in relation to levels of stress experienced by their mothers while they were pregnant (Ronald, Pennell, & Whitehouse, 2011). Almost 3,000 pregnant women were recruited into the study during their pregnancy and were interviewed about their stressful life experiences. Later, when their children were 2 years old, mothers completed the CBCL-Preschool questionnaire. The results of the study showed that higher levels of maternal stress during pregnancy (such as a difficult divorce or packing up and moving to a new house) were associated with increased attention deficit/hyperactivity problems in children over 2 years later. These findings suggest that stressful events experienced during prenatal development may be associated with problematic child behavioral functioning years later – although additional research is needed.

Interview techniques

Whereas infants and very young children are unable to talk about their own thoughts and behaviors, older children and adults are commonly asked to use language to discuss their thoughts and knowledge about the world. In fact, these verbal report paradigms are among the most widely used in psychological research. For instance, a researcher might present a child with a vignette or short story describing a moral dilemma, and the child would be asked to give their own thoughts and beliefs (Walrath, 2011). For example, children might react to the following:

"Mr. Kohut's wife is sick and only one medication can save her life. The medicine is extremely expensive and Mr. Kohut cannot afford it. The druggist will not lower the price. What should Mr. Kohut do, and why?"

Children can provide written or verbal answers to these types of scenarios. They can also offer their perspectives on issues ranging from attitudes towards drug use to the experience of fear while falling asleep to their memories of getting lost in public places – the possibilities are endless. Verbal reports such as interviews and surveys allow children to describe their own experience of the world.

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2.6: Approaches to Studying Change Over Time

Now you know about some tools used to conduct research with infants and young children. **Research methods** are the tools that are used to collect information. **Research design** is the strategy or blueprint for deciding how to collect and analyze information. Research design dictates which methods are used and how.

Researchers typically focus on two distinct types of comparisons when conducting developmental research. The first kind of comparison examines **change within individuals**. As the name suggests, this type of analysis measures the ways in which a specific person changes (or remains the same) over time. For example, a Lifespan Psychology scientist might be interested in studying the same group of infants at 12 months, 18 months, and 24 months to examine how vocabulary and grammar change over time. This kind of question would be best answered using a longitudinal research design. Another sort of comparison focuses on **changes between groups**. In this type of analysis, researchers study average changes in behavior between groups of different ages. Returning to the language example, a scientist might study the vocabulary and grammar used by 12-month-olds, 18-month-olds, and 24-month-olds to examine how language abilities change with age. This kind of question would be best answered using a cross-sectional research design.

Longitudinal Research Designs

Longitudinal research designs are used to examine behavior in the same subjects over time. For example, when considering our example of hide-and-seek behaviors in preschoolers, a researcher might conduct a longitudinal study to examine whether 2-year-olds develop into better hidiers over time. To this end, a researcher might observe a group of 2-year-old children playing hide-and-seek with plans to observe them again when they are 4 years old – and again when they are 6 years old. This study is longitudinal in nature because the researcher plans to study the same children as they age. Based on her data, the researcher might conclude that 2-year-olds develop more mature hiding abilities with age. Remember, researchers examine games such as hide-and-seek not because they are interested in the games themselves, but because they offer clues to how children think, feel, and behave at various ages.



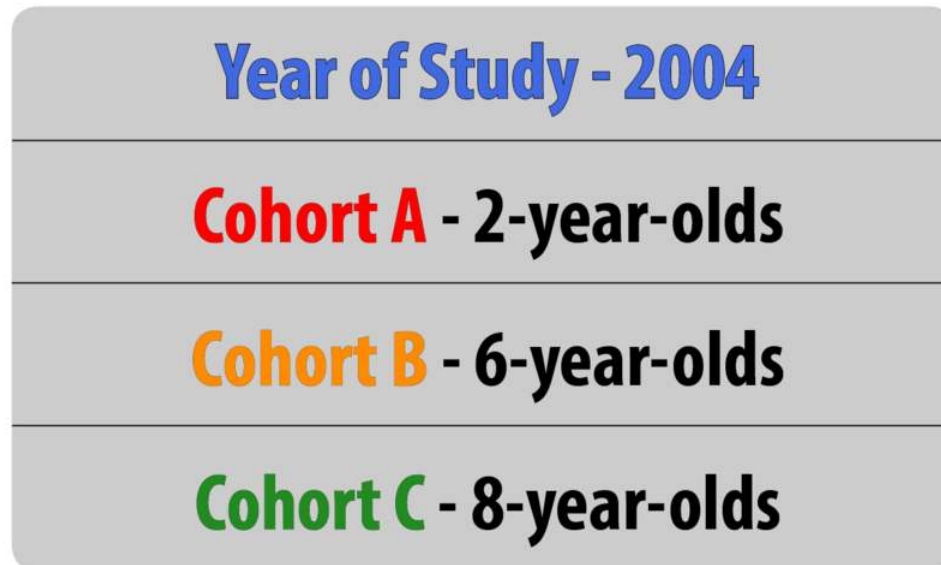
Example of longitudinal research design

Longitudinal studies may be conducted over the short term (over a span of months, as in Wiebe, Lukowski, & Bauer, 2010) or over much longer durations (years or decades, as in Lukowski et al., 2010). For these reasons, longitudinal research designs are optimal for studying stability and change over time. Longitudinal research also has limitations, however. For one, longitudinal studies are expensive: they require that researchers maintain continued contact with participants over time, and they necessitate that scientists have funding to conduct their work over extended durations (from infancy to when participants were 19 years old in Lukowski et al., 2010). An additional risk is **attrition**. Attrition occurs when participants fail to complete all portions of a study. Participants may move, change their phone numbers, 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.

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. A final limitation of longitudinal research is that the results may be impacted by **cohort effects**. Cohort effects occur when the results of the study are affected by the particular point in historical time during which participants are tested. As an example, think about how peer relationships in childhood have likely changed since February 2004 – the month and year Facebook was founded. Cohort effects can be problematic in longitudinal research because only one group of participants are tested at one point in time – different findings might be expected if participants of the same ages were tested at different points in historical time.

Cross-sectional designs

Cross-sectional research designs are used to examine behavior in participants of different ages who are tested at the same point in time. When considering our example of hide-and-seek behaviors in children, for example, a researcher might want to examine whether older children more often hide in novel locations (those in which another child in the same game has never hidden before) when compared to younger children. In this case, the researcher might observe 2-, 4-, and 6-year-old children as they play the game (the various age groups represent the “cross sections”). This research is cross-sectional in nature because the researcher plans to examine the behavior of children of different ages within the same study at the same time. Based on her data, the researcher might conclude that 2-year-olds more commonly hide in previously-searched locations relative to 6-year-olds.



Example of cross-sectional research design

Cross-sectional designs are useful for many reasons. Because participants of different ages are tested at the same point in time, data collection can proceed at a rapid pace. In addition, because participants are only tested at one point in time, practice effects are not an issue – children do not have the opportunity to become better at the task over time. Cross-sectional designs are also more cost-effective than longitudinal research designs because there is no need to maintain contact with and follow-up on participants over time.

It should be noted that studies that look at subjects of different ages at one point in time are just one type cross-sectional study. Cross-sectional studies can also be used to look at cultural differences (cross-cultural studies) and are also commonly used in health-related studies where subjects differ not by age, but by exposure to some risk factor. Cross-sectional studies are typically descriptive studies that produce correlational data. This is true regardless of how the subjects studied differ.

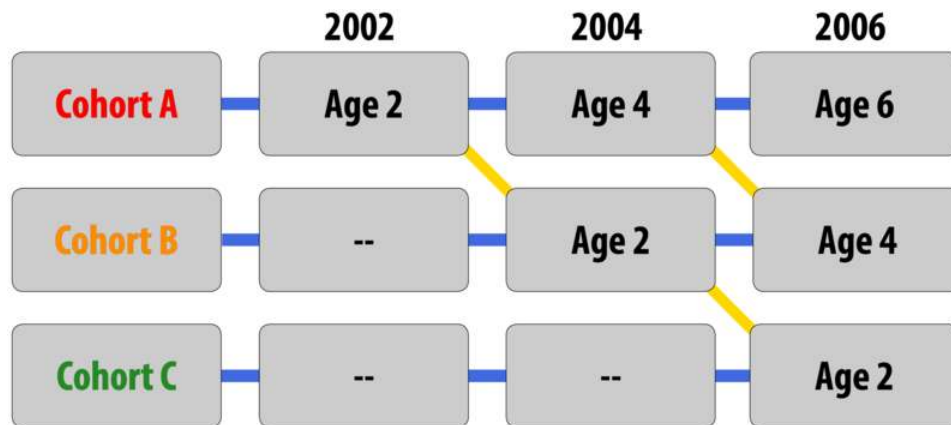
One of the primary limitations of cross-sectional research is that the results yield information on age-related change, not development per se. That is, although the study described above can show that 6-year-olds are more advanced in their hiding behavior than 2-year-olds, the data used to come up with this conclusion were collected from different children. It could be, for instance, that this specific sample of 6-year-olds just happened to be particularly clever at hide-and-seek. As such, the researcher cannot conclude that 2-year-olds develop into better hiders with age; she can only state that 6-year-olds, on average, are more sophisticated hiders relative to children 4 years younger. As addressed earlier, one can only determine a cause and effect relationship when an experiment is done. In order to determine that turning age six caused a change in behavior, we would have to be able to manipulate age (it would need to be an independent variable in an experiment). As this is not possible, we are limited to making observational conclusions as opposed to causal ones.

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 work includes participants of different ages. This research design is also distinct from those that have been discussed previously in that

children 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 account for the possibility of cohort effects.

Consider, once again, our example of hide-and-seek behaviors. In a study with a sequential design, a researcher might enroll three separate groups of children (Groups A, B, and C). Children in Group A would be enrolled when they are 2 years old and would be tested again when they are 4 and 6 years old (similar in design to the longitudinal study described previously). Children in Group B would be enrolled when they are 4 years old and would be tested again when they are 6 and 8 years old. Finally, children in Group C would be enrolled when they are 6 years old and would be tested again when they are 8 and 10 years old.



Example of sequential research design

Studies with sequential designs are powerful because they allow for both longitudinal and cross-sectional comparisons. This research design also allows for the examination of cohort effects. For example, the researcher could examine the hide-and-seek behavior of 6-year-olds in Groups A, B, and C to determine whether performance differed by group when participants were the same age. If performance differences were found, there would be evidence for a cohort effect. In the hide-and-seek example, this might mean that children from different time periods varied in the amount they giggled or how patient they are when waiting to be found. Sequential designs are also appealing because they allow researchers to learn a lot about development in a relatively short amount of time. In the previous example, a four-year research study would provide information about 8 years of developmental time by enrolling children ranging in age from two to ten years old.

Because 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, 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.

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.

Advantages and Disadvantages of Different Research Designs

Research Design	Advantages	Disadvantages
Longitudinal	• Examines changes within individuals over time • Allows for a developmental analysis	• Expensive • Time-consuming • Participants may drop-out • Cannot examine cohort effects
Cross-sectional	• Examines changes between participants of different ages at one point in time • Provides information on age-related changes • Allows for the observation of cohort effects as subjects are different ages	• Cannot examine how an individual changes over time • Presumes minimal individual differences in development
Sequential (combines elements of longitudinal and cross-sectional)	• Examines changes within individuals over time • Examines changes between participants of different ages at one point in time • Can be used to study cohort effects	• May be expensive • Possibility of practice effects

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2.7: Challenges Associated with Conducting Developmental Research

Need to remove language limiting focus to children - note the unique issues with children without limiting the focus to children.

Ultimately, we are limited with respect to what we can study and how we study it. We now review some of the main issues that are encountered when conducting developmental research. In particular, we focus our discussion on ethical concerns, recruitment issues, and participant attrition. It should be noted that ethical considerations are an element of any research, not merely developmental research and not merely research with human subjects.

Ethical concerns

As a student of psychological science, you may already know that **Institutional Review Boards** (IRBs) review and approve of all research projects that are conducted at universities, hospitals, and other institutions. 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 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.

When thinking about special accommodations in developmental research, consider the **informed consent process**. If you have ever participated in psychological 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/caregiver 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 also 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/caregiver 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 Lifespan and Developmental science.

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 do so 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 Baby-and-me classes, local malls, and preschools or day care 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.

Attrition

Another important consideration when conducting research with infants and young children is **attrition**. Although attrition is quite common in longitudinal research in particular, 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 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.



Figure 2.7.1: Participating in developmental research can sometimes be difficult for both children and their parents. This can contribute to a higher attrition rate than is typical in other types of research. [Image: Tina Franklin, <https://goo.gl/bN19Gm>, CC BY 2.0, goo.gl/5YbMw6]

Conclusions

Lifespan Psychology is a fascinating field of study – but care must be taken to ensure that researchers use appropriate methods to examine infant and child 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. You should now have a solid understanding of these various issues and be ready to think more critically about research questions that interest you. For example, when considering our initial example of hide-and-seek behaviors in preschoolers, you might ask questions about what other factors might contribute to hiding behaviors in children. Do children with older siblings hide in locations that were previously searched less often than children without siblings? What other abilities are associated with the development of hiding skills? Do children who use more sophisticated hiding strategies as preschoolers do better on other tests of cognitive functioning in high school? 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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CHAPTER OVERVIEW

3: Prenatal Development

- [3.1: Prenatal Development - What Will You Learn?](#)
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- [3.4: Genetic and Chromosomal Abnormalities](#)
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3.1: Prenatal Development - What Will You Learn?

After reading "Prenatal Development" you should be able to:

1. Explain what genes and chromosomes are and how they are related.
2. Define gamete.
3. Explain what determines the chromosomal sex of the child.
4. Question the assertion that human traits are genetic.
5. Differentiate between the germinal, embryonic, and fetal periods of development.
6. Describe human development during the germinal, embryonic, and fetal periods.
7. Describe delivery and complications of pregnancy and delivery.
8. Discuss the risks associated with exposure to common teratogens.
9. Explain what an APGAR score is.



Figure 3.1.1. ([Unsplash License](#); [Jude Beck](#) via [Unsplash](#))

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3.2: From Evolution to Gene Basics

We'll begin our exploration of prenatal development by looking at some of the ways in which heredity helps to shape the way we are. We will look at what happens genetically during conception and take a brief look some genetic abnormalities (or non-typical traits). Before going into these topics, however, it is important to emphasize the interplay between heredity (genetics) and the environment. Why are you the way you are? As you consider some of your features (height, weight, personality, being diabetic, etc.), ask yourself whether these features are a result of heredity (nature) or environmental factors (nurture) - 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. 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. 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’s 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.

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 potential. And environmental circumstances can trigger symptoms of a genetic disorder. For example, a person who has sickle cell anemia, a recessive genetic disorder, can experience a sickle cell crisis under conditions of oxygen deprivation. Someone predisposed genetically to type two diabetes can trigger the disease through poor diet and little exercise. In both instances, the individual's genes combine with the environment to determine the ultimate outcome.

The Human Genome Project

The Human Genome Project is an internationally funded effort to map the locations of human genes and understand the role these genes play in development, health, and illness.



Figure 3.2.1: (Pixabay License; Arek Socha via Pixabay)

Chromosomes consist of genes. When we discuss inherited conditions, we will explore those that are caused a discrete gene or genes (genetic conditions that involve some subset of a chromosome) and those that involve an entire chromosome (chromosomal disorders). There are an estimated 25,000 to 30,000 genes on each chromosome; a number far below the estimate of 100,000-150,000 held before the work of the Human Genome Project.

Understanding the role of genes in health and illness can bring about both harm and good (Weitz, 2007). A person who knows that they are at risk for developing a genetic disorder may be able to adopt lifestyle practices that minimize the risk and a person who discovers that they are not at risk may find comfort in knowing that they do not have to fear a particular disease. However, a person who finds out that they are at risk and there is nothing that can be done about it may experience years of fear and anxiety. And the availability of genetic testing may be more widespread than the availability of genetic counseling which can be very expensive. The possible stigma and discrimination that those with illness or at risk for illness must also be considered. In light of the high costs of

health insurance, many companies are starting to offer benefits contingent on health assessments and lifestyle recommendations; and continued coverage depends on an employee following these recommendations. So a person who smokes nicotine products may have to pay a higher premium than a non-smoker or a person who is overweight may be required to engage in a program of exercise and be monitored for improvement. What if a person finds out that they carry the gene for Huntington's disease (a neurological disorder that is ultimately fatal) which may surface when a person reaches their 40s? The impact this knowledge will have on health care still remains unknown. Who should know what is on your genome? Do you think this information should be shared between mates? What about employers? What would be the advantages and disadvantages?

Genes and Chromosomes

Our genetic information is stored in 23 pairs of chromosomes that vary widely in size and shape. Chromosome 1 is the largest and is over three times bigger than chromosome 22. The 23rd pair of chromosomes are two special chromosomes, X and Y, that determine our biological sex. Females have a pair of X chromosomes (46, XX), whereas males have one X and one Y chromosomes (46, XY). Chromosomes are made of DNA, and genes are special units of chromosomal DNA. Each chromosome is a very long molecule, so it needs to be wrapped tightly around proteins for efficient packaging.

The first step in the development of a new human life is the combination of DNA from the male gamete (sperm) and the female gamete (egg). While most of our cells contain 23 pairs of chromosomes, gametes contain only 23 unpaired chromosomes. During the process of meiosis, unique gametes are created that carry just half of the directions needed to create a new life. The uniqueness of those gametes is important to note as it is one of the factors that ensures that you and your siblings are not carbon copies of one another. Identical twins are carbon copies, sharing all of their genes. Identical twins are also known as "monozygotic" as they form from one zygote (fertilized egg) that then splits. In contrast, fraternal or dizygotic twins are no more genetically alike than other siblings. We'll now move on to explore the process of conception.



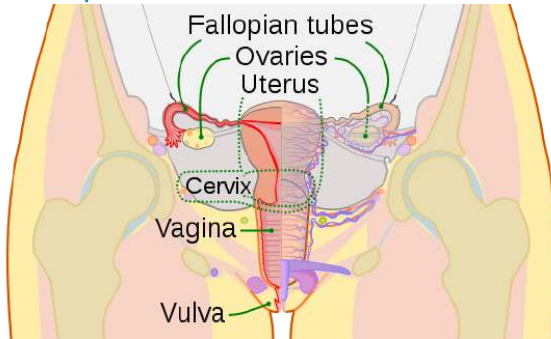
Figure 3.2.2: Identical or monozygotic twins share all of their genes. (Pexels License; Derek Dolro via Pexels)

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3.3: From Conception to Phenotype

We'll now take a closer look at how life begins and then transition to exploring the terminology that relates to what genes we carry (our genotype) as compared to those traits that we express (our phenotype). As we have already noted, all that we are (our phenotype) is, ultimately, a product of nature (our genotype) interacting with nurture (our environment).

Conception



The Female Reproductive System

Gametes

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

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 (or insemination, depending), 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 male, unites with the nucleus of the egg. As a result, a new cell is formed. This cell, containing the combined genetic information from both genetic contributors, is referred to as a zygote.

Chromosomes contain genetic information from each parent. While other normal human cells have 46 chromosomes (or 23 pair), gametes contain 23 chromosomes. 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 and Keeton, 1997).

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" (these are in quotes because there are many variations to this process including anonymous donors from sperm banks and those not considered to be a parent to the child). However, the remaining chromosome looks like an X or a Y. Half of the male's sperm contain a Y chromosome and half contain an X. All of the ova contain two X chromosomes. If the child receives the combination of XY, the child will usually be termed genetically male. If it receives the XX combination, the child will usually be termed genetically female.

Monozygotic and Dizygotic Twins

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. Are you an identical twin?

Sometimes, however, 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).

Genotypes and Phenotypes

The word **genotype** refers to the sum total of all the genes a person inherits. The word phenotype refers to the features that are actually expressed, visible and not. 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 (Berger, 2005). Some features follow the additive pattern which means that many different genes contribute to a final outcome. Height and skin tone are products of an additive pattern. In other cases, a gene might either be turned on or off depending on the gene with which it is paired or in response to something in the environment. Some genes are considered **dominant** because they will be expressed if they are present (only one gene is needed for the phenotype to be impacted). 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 of 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. Sickle cell anemia is a recessive disease; Huntington disease is a 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 sickle cell anemia, the disease will occur. But if a person has only one recessive gene for the disease, the person may experience effects of the disease only under circumstances of oxygen deprivation such as high altitudes or physical exertion (Berk, 2004).

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3.4: Genetic and Chromosomal Abnormalities

Before we explore development, let's begin with a consideration of the abnormalities that can be present within the directions for development - conditions that arise from the presence of a specific gene or genes and conditions that are due to differences at the level of the chromosome. Genetic conditions are those caused by the expression of a gene. We can describe genetic conditions based on how they are inherited or their inheritance patterns. Because genetic conditions involve a specific gene or genes, their effects are more specific, more isolated. In contrast, chromosomal conditions are those that involve an entire chromosome or a large chunk of chromosome.

Genetic Inheritance Patterns

Genes reside on chromosomes and, ultimately, provide the directions for making proteins that direct development. Genetic conditions - and genetic traits more generally - exhibit three different types of inheritance patterns.

Recessive

Recessive conditions are caused by a gene that is typically only expressed if the gene is received from both parents. In other words, you'd have to inherit the gene from both parents in order for the trait to be evident in your phenotype.

- "Recessive is a quality found in the relationship between two versions of a gene. Individuals receive one version of a gene, called an allele, from each parent. If the alleles are different, the dominant allele will be expressed, while the effect of the other allele, called recessive, is masked. In the case of a recessive genetic disorder, an individual must inherit two copies of the mutated allele in order for the disease to be present." (from the [National Human Genome Research Institute](#))
- As you may suspect, recessive traits and conditions are less commonly expressed as they must be received from both parents in order to impact the phenotype. And the expression of such things increases when members of a species are closely related.
- Examples of recessive disorders - [sickle cell](#), [Tay-Sachs](#), [cystic fibrosis](#).

Dominant

Dominant conditions are those that require only one gene for you to express them. In other words, if you inherit the gene, you inherit the condition. As noted previously, Huntington's Disease is an example of a dominant condition.

- "Autosomal dominance is a pattern of inheritance characteristic of some genetic diseases. "Autosomal" means that the gene in question is located on one of the numbered, or non-sex, chromosomes. 'Dominant' means that a single copy of the disease-associated mutation is enough to cause the disease. This is in contrast to a recessive disorder, where two copies of the mutation are needed to cause the disease. Huntington's disease is a common example of an autosomal dominant genetic disorder." (from the [National Human Genome Research Institute](#))

Sex-linked Genetic

These are, again, conditions caused by a gene - but they are unique in that the gene resides on one of the 23rd chromosomes - the X or the Y. Most sex-linked genetic conditions are on the X chromosome, so we refer to them as "X-linked". Hemophilia is one example of an X-linked recessive condition. This means it is preferentially seen in males as the gene for the condition resides on the X chromosome and genetic males don't have a 2nd X chromosome that could carry the dominant non-hemophilia gene to override the recessive gene for hemophilia.

- "Sex linked is a trait in which a gene is located on a sex chromosome. 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 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." (from the [National Human Genome Research Institute](#))
- The most common form of "color-blindness" is a sex-linked genetic condition - X-linked and recessive. Consequently, it is rare for a female to be color-blind.

Chromosomal Disorders

Conditions can be caused by a gene or a select group of genes - and they can be a consequence of missing genes. We also have conditions that are due to an error at the level of the whole chromosome - which means many genes are involved. And we have conditions that involve a loss of some part of a chromosome. As the nature of conditions that are due to some element of a chromosome being impacted is very diverse, we're going to focus on conditions that involve the whole chromosome. And here we will make two distinctions - those that involve the twenty-two non-sex chromosomes and those that involve the 23rd chromosomes, X or Y. We'll focus on three conditions as a means of introducing these sorts of disorders, Down syndrome, Turner syndrome, and Klinefelter syndrome. Tyler and Edman (2004), offer this overview:

Down syndrome, Turner syndrome, and Klinefelter syndrome constitute the most common chromosomal abnormalities encountered by primary care physicians. Down syndrome typically is recognized at birth, Turner syndrome often is not recognized until adolescence, and many men with Klinefelter syndrome are never diagnosed. Although each syndrome is caused by an abnormal number of chromosomes, or aneuploidy, they are distinct syndromes with learning disabilities and a predisposition toward autoimmune diseases, endocrinologic disorders, and cancers. Optimal health care requires a thorough knowledge of the unique health risks, psychoeducational needs, functional capabilities, and phenotypic variation associated with each condition.

All three conditions share one common feature - an abnormal chromosomal number.

Autosomal (Non-sex) Chromosomal Disorders

Down syndrome, trisomy 21, is a relatively common chromosomal disorder. Individuals with this condition have three copies (trisomy) of the 21st chromosome. "Autosomal" chromosomal disorders involve abnormal numbers of the non-sex chromosomes, chromosomes 1-22. The following information about Down syndrome consists of excerpts from a [National Institutes of Health \(NIH\) website](https://www.nlm.nih.gov/art/large/upslanting-palpebral-fissures.jpeg).

Down syndrome is a chromosomal condition that is associated with intellectual disability, a characteristic facial appearance, and weak muscle tone (hypotonia) in infancy. All affected individuals experience cognitive delays, but the intellectual disability is usually mild to moderate.

People with Down syndrome often have a characteristic facial appearance that includes a flattened appearance to the face, outside corners of the eyes that point upward ([Elements of Morphology, National Human Genome Research Institute](https://www.nlm.nih.gov/art/large/upslanting-palpebral-fissures.jpeg) Use of illustrations and other content data-remote="/art/large/upslanting-palpebral-fissures.jpeg" data-source-href="https://elementsofmorphology.nih.gov...03f00fcb26b7c4" data-title="Upslanting palpebral fissures" data-toggle="lightbox" href="https://ghr.nlm.nih.gov/art/large/up...-fissures.jpeg" target="_blank" title="Image">upslanting palpebral fissures), small ears, [Credit: Elements of Morphology, National Human Genome Research Institute](https://www.nlm.nih.gov/art/large/short-neck.jpeg) Use of illustrations and other content data-remote="/art/large/short-neck.jpeg" data-source-href="https://elementsofmorphology.nih.gov/index.cgi?tid=c75e63fd749ec7a8" data-title="Short neck" data-toggle="lightbox" href="https://ghr.nlm.nih.gov/art/large/short-neck.jpeg" target="_blank" title="Image">a short neck, and a tongue that tends to stick out of the mouth. Affected individuals may have a variety of birth defects. Many people with Down syndrome have small hands and feet and [Use of illustrations and other content](https://www.nlm.nih.gov/art/large/single-transverse-palmar-crease.jpeg) data-remote="/art/large/single-transverse-palmar-crease.jpeg" data-title="Single transverse palmar crease" data-toggle="lightbox" href="https://ghr.nlm.nih.gov/art/large/single-transverse-palmar-crease.jpeg" target="_blank" title="Image">a single crease across the palms of the hands. About half of all affected children are born with a heart defect. Digestive abnormalities, such as a blockage of the intestine, are less common.

Down syndrome occurs in about 1 in 700 newborns. About 5,300 babies with Down syndrome are born in the United States each year, and approximately 200,000 people in this country have the condition. Although women of any age can have a child with Down syndrome, the chance of having a child with this condition increases as a woman gets older.

Most cases of Down syndrome result from [Use of illustrations and other content](https://www.nlm.nih.gov/art/large/trisomy.jpeg) data-remote="/art/large/trisomy.jpeg" data-title="Trisomy (Down syndrome)" data-toggle="lightbox" href="https://ghr.nlm.nih.gov/art/large/trisomy.jpeg" target="_blank" title="Image">trisomy 21, which means each cell in the body has three copies of [chromosome 21](#) instead of the usual two copies.

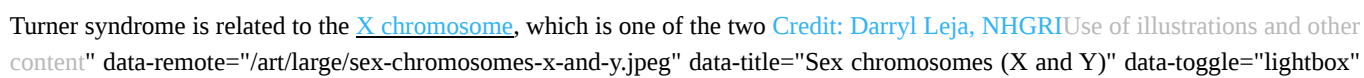
Sex Chromosome Disorders

Sex chromosome (or chromosomal) disorders involve an extra or missing sex chromosome (X or Y). As they involve a sex chromosome, endocrinologic (hormonal) disorders are commonly seen. Turner syndrome (XO) and Klinefelter syndrome (XXY) are sex chromosome disorders. The information that follows is excerpted from the NIH site.

Turner Syndrome (XO)

Turner syndrome is a chromosomal condition that affects development in females. The most common feature of Turner syndrome is short stature, which becomes evident by about age 5. An early loss of ovarian function (ovarian hypofunction or premature ovarian failure) is also very common. The ovaries develop normally at first, but egg cells (oocytes) usually die prematurely and most ovarian tissue degenerates before birth. Many affected girls do not undergo puberty unless they receive hormone therapy, and most are unable to conceive (infertile). A small percentage of females with Turner syndrome retain normal ovarian function through young adulthood.

This condition occurs in about 1 in 2,500 newborn girls worldwide, but it is much more common among pregnancies that do not survive to term (miscarriages and stillbirths).

Turner syndrome is related to the [X chromosome](#), which is one of the two [Credit: Darryl Leja, NHGRI](#)Use of illustrations and other content" data-remote="/art/large/sex-chromosomes-x-and-y.jpeg" data-title="Sex chromosomes (X and Y)" data-toggle="lightbox" href="https://ghr.nlm.nih.gov/art/large/sex-chromosomes-x-and-y.jpeg" target="_blank" title="Image">sex chromosomes. People typically have two sex chromosomes in each cell: females have two X chromosomes, while males have one X chromosome and one [Y chromosome](#). Turner syndrome results when one normal X chromosome is present in a female's cells and the other sex chromosome is missing or structurally altered. The missing genetic material affects development before and after birth.

About half of individuals with Turner syndrome have [Use of illustrations and other content" data-remote="/art/large/turner-syndrome-karyotype.jpeg" data-title="Turner syndrome karyotype" data-toggle="lightbox" href="https://ghr.nlm.nih.gov/art/large/turner-syndrome-karyotype.jpeg" target="_blank" title="Image">monosomy X](#), which means each cell in the individual's body has only one copy of the X chromosome instead of the usual two sex chromosomes.

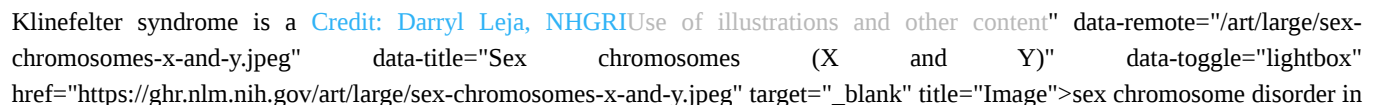
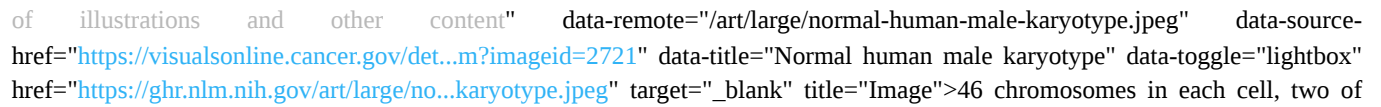
Most cases of Turner syndrome are not inherited. When this condition results from [Use of illustrations and other content" data-remote="/art/large/turner-syndrome-karyotype.jpeg" data-title="Turner syndrome karyotype" data-toggle="lightbox" href="https://ghr.nlm.nih.gov/art/large/turner-syndrome-karyotype.jpeg" target="_blank" title="Image">monosomy X](#), the chromosomal abnormality occurs as a random event during the formation of reproductive cells (eggs and sperm) in the affected person's parent.

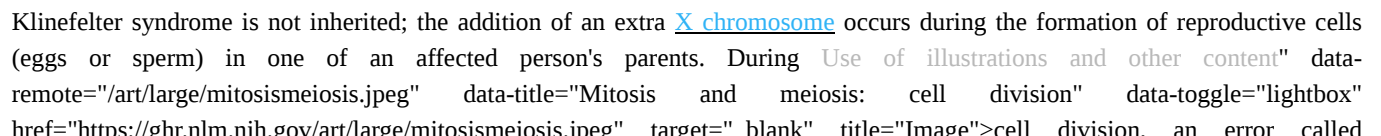
Klinefelter Syndrome (XXY)

Klinefelter syndrome is a chromosomal condition in boys and men that can affect physical and intellectual development. Most commonly, affected individuals are taller than average are unable to father biological children (infertile); however the signs and symptoms of Klinefelter syndrome vary among boys and men with this condition. In some cases, the features of the condition are so mild that the condition is not diagnosed until puberty or adulthood, and researchers believe that up to 75 percent of affected men and boys are never diagnosed.

Boys and men with Klinefelter syndrome typically have small testes that produce a reduced amount of testosterone (primary testicular insufficiency). Testosterone is the hormone that directs male sexual development before birth and during puberty. Without treatment, the shortage of testosterone can lead to delayed or incomplete puberty, breast enlargement (gynecomastia), decreased muscle mass, decreased bone density, and a reduced amount of facial and body hair. As a result of the small testes and decreased hormone production, affected males are infertile but may benefit from assisted reproductive technologies.

Klinefelter syndrome affects about 1 in 650 newborn boys. It is among the most common sex chromosome disorders, which are conditions caused by changes in the number of [Credit: Darryl Leja, NHGRI](#)Use of illustrations and other content" data-remote="/art/large/sex-chromosomes-x-and-y.jpeg" data-title="Sex chromosomes (X and Y)" data-toggle="lightbox" href="https://ghr.nlm.nih.gov/art/large/sex-chromosomes-x-and-y.jpeg" target="_blank" title="Image">sex chromosomes (the [X chromosome](#) and the [Y chromosome](#)).

Klinefelter syndrome is a [Credit: Darryl Leja, NHGRI](#) Use of illustrations and other content" data-remote="/art/large/sex-chromosomes-x-and-y.jpeg" data-title="Sex chromosomes (X and Y)" data-toggle="lightbox" href="https://ghr.nlm.nih.gov/art/large/sex-chromosomes-x-and-y.jpeg" target="_blank" title="Image">sex chromosome disorder in boys and men that results from the presence of an extra [X chromosome](#) in cells. People typically have [National Cancer Institute](#) Use of illustrations and other content" data-remote="/art/large/normal-human-male-karyotype.jpeg" data-source-href="https://visualsonline.cancer.gov/det...m?imageid=2721" data-title="Normal human male karyotype" data-toggle="lightbox" href="https://ghr.nlm.nih.gov/art/large/no...karyotype.jpeg" target="_blank" title="Image">46 chromosomes in each cell, two of which are the sex chromosomes. Females have two X chromosomes (46,XX), and males have one X and one [Y chromosome](#) (46,XY). Most often, boys and men with Klinefelter syndrome have the usual X and Y chromosomes, plus one extra X chromosome, for a total of 47 chromosomes (47,XXY).

Klinefelter syndrome is not inherited; the addition of an extra [X chromosome](#) occurs during the formation of reproductive cells (eggs or sperm) in one of an affected person's parents. During  Use of illustrations and other content" data-remote="/art/large/mitosismeiosis.jpeg" data-title="Mitosis and meiosis: cell division" data-toggle="lightbox" href="https://ghr.nlm.nih.gov/art/large/mitosismeiosis.jpeg" target="_blank" title="Image">cell division, an error called nondisjunction prevents X chromosomes from being distributed normally among reproductive cells as they form.

This page last updated October 19, 2022.

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3.5: Periods of Prenatal Development

Now we turn our attention to prenatal development which is divided into three periods: the germinal period, the embryonic period, and the fetal period. Here is an overview of some of the changes that take place during each period.

The Germinal Period

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 this time, the organism begins cell division and growth. After the fourth doubling, differentiation of the cells begins to occur as well. It's estimated that about 60 percent of natural conceptions fail to implant in the uterus. The rate is higher for in vitro conceptions.

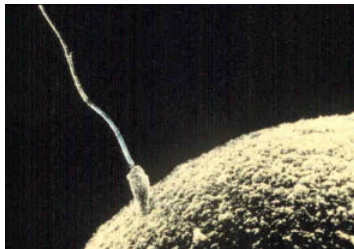


Figure 3.5.1: Sperm and ovum at conception. (PDM; Unknown via [Wikipedia](#))

The Embryonic Period

The embryonic period begins once the organism is implanted in the uterine wall. It lasts from the third through the eighth week after conception. During this period, cells continue to differentiate and at 22 days after conception the neural tube forms which will become the brain and spinal column. 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.



Figure 3.5.2: During the embryonic period, the head, arms, and legs are clearly visible. (CC BY 2.0; [lunar caustic](#) via Flickr)

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. (We will look at this in the section on teratology below.) Potential mothers are not often aware of the risks they introduce to the developing child during this time. The embryo is approximately 1 inch in length and weighs about 4 grams at the end of this period.

The Fetal Period

From the ninth week until birth, the organism is referred to as a fetus. During this stage, the major structures are continuing to develop. 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.

During the 4th-6th months, the eyes become more sensitive to light and hearing develops. Respiratory system continues to develop. Reflexes such as sucking, swallowing and hiccupping develop during the 5th month. Cycles of sleep and wakefulness are present at that time as well. The first chance of survival outside the womb, known as the age of viability is reached at about 22 and 26 weeks (Moore & Persaud, 1998). Many practitioners hesitate to resuscitation before 24 weeks. 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.

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.



Figure 3.5.3: Close relationships are the fabric of society, and are integral to the maintenance of our species. (Unsplash License; Mikael Stenberg via Unsplash)

Environmental Risks

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 many mothers are unaware that they are pregnant. Today, we know many of the factors that can jeopardize the health of the developing child. The study of factors that contribute to birth defects is called teratology. Teratogens are factors that can contribute to birth defects which include some maternal diseases, pollutants, drugs and alcohol.

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. In other words, the dose of a teratogen that a pregnancy is exposed to is a determinant of the effects and that dose can be modified by not only the mother's exposure but by characteristics of the mother.
- Genetics: Genetic make-up also plays a role on the impact a particular teratogen might have on the child. Just as genes later in life make us more or less susceptible to various disorders, a child's genes may make it more or less likely to exhibit the effects of exposure to a teratogen. This is suggested by fraternal (dizygotic) 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 process a teratogen such that its effect on her offspring is minimized - effectively decreasing exposure that occurs.

It should be noted that the effects of teratogens are not something that can be studied experimentally in humans. In other words, as it would be unethical to expose a human embryo or fetus to radiation, alcohol, cocaine, or high doses of caffeine, our understanding of the danger of such things has developed through the use of correlational studies and animal studies.

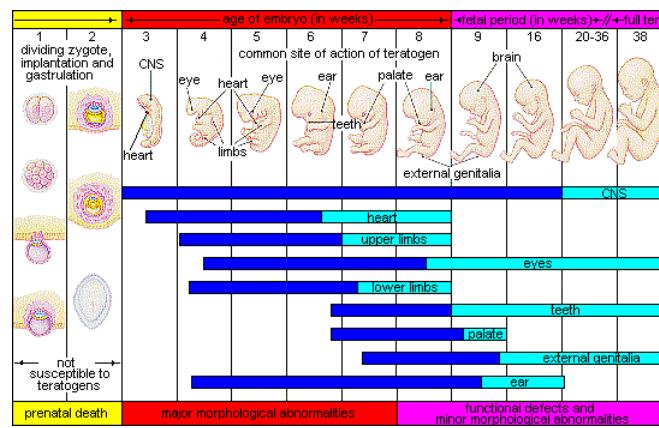


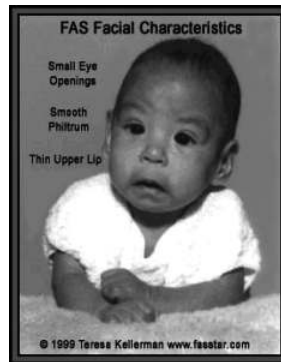
Figure 3.5.6: Critical Periods of Prenatal Development. (Unknown; Not Specified via [Lumen Learning](#))

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3.6: Teratogens

A look at some teratogens

One of the most commonly used teratogens is alcohol and 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 or 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. Binge drinking (5 or more on a single occasion) or 7 or more drinks during a single week place a child at risk. In extreme cases, alcohol consumption can lead to fetal death but more frequently it can result in fetal alcohol spectrum disorders (FASD). FASD is the terminology that is now used when looking at the effects of exposure and replaces the term fetal alcohol syndrome (FAS), although you may see the two terms used interchangeably. FASD is preferred because it recognizes that symptoms occur on a spectrum and that all individuals are not equally impacted. Children with FASD share certain physical features such as flattened noses, small eye holes, and small heads, intellectual developmental delay, 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 include kidney, bone and heart problems.



Tobacco is the second most widely used teratogen and the number of adolescent females who smoke is increasing. In fact, among adolescents, females are just as likely to smoke as are males. Tobacco use during pregnancy has been associated with low birth weight, placenta previa, preterm delivery, fetal growth restriction and sudden infant death syndrome (Center for Disease Control, 2004).

Illicit drugs as well as prescribed medications can have serious teratogenic effects. It is difficult to completely determine the effects of a particular illicit drug on a developing child because most mothers, who use, use more than one substance. However, several problems seem clear. The use of cocaine is connected with low birth weight, stillbirths and spontaneous abortion. Heavy marijuana use is associated with brain damage and ADHD and mothers addicted to heroin often pass that addiction to their child. And many medications do not include adequate information on risks posed if taken during pregnancy (Center for Disease Control, 2004).

Pollutants

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. If a mother is exposed to radiation, particularly during the first 3 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 development delay (Dietrich, 1999).

HIV

One of the most potentially devastating teratogens is HIV. It is estimated that between 630,000 to 820,000 children were newly infected with HIV worldwide in 2005. Most of this infection is from mother-to-child through the placenta or birth canal (Newell,

2005). Fortunately, there are measures that can be taken to lower the chance the child will contract the disease (such as the use of antiretroviral drugs from 14 weeks after conception until birth, avoiding breastfeeding, and delivering the child by c-section). Unfortunately, some women do not know they are HIV positive during pregnancy and others cannot afford the costly drugs used for treating AIDS. The transmission rate of HIV from mother to child has been reduced in the United States to between 100-200 infants annually.

Maternal Diseases

German measles (or rubella) have been associated with a number of maladies. If the mother contracts the disease during the first three months of pregnancy, damage can occur in the eyes, ears, heart or brain of the unborn child. Deafness is almost certain if the mother has German measles before the 11th week of prenatal development and can also cause brain damage. Gonorrhea, syphilis, and Chlamydia are sexually transmitted infections that can be passed to the fetus by an infected mother; mothers should be tested as early as possible to minimize the risk of spreading these infections (Center for Disease Control, 2006).

Pregnancy

Complications of Pregnancy



Minor complications: There are a number of common side effects of pregnancy. Not everyone experiences all of these nor to the same degree. And although they are considered “minor” this is not to say that 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!

Major Complications: The following are some serious complications of pregnancy which can pose health risks to mother and child and that often require hospitalization. Ectopic pregnancy occurs when the zygote becomes attached to the fallopian tube before reaching the uterus. About 1 in 50 pregnancies in the United States are tubal pregnancies and this number has been increasing because of the higher rates of pelvic inflammatory disease and Chlamydia (Carroll, 2007). Abdominal pain, vaginal bleeding, nausea and fainting are symptoms of ectopic pregnancy. Toxemia or blood poisoning due to kidney malfunction is experienced by 6 to 7 percent of women during their last months of pregnancy. If untreated toxemia can lead to preeclampsia or swelling and hypertension or progress to eclampsia which is can involve coma or death.

Maternal Mortality: Approximately 1000 women die in childbirth around the world each day (World Health Organization, 2010). Rates are highest in Sub-Saharan Africa and South Asia although there has been a substantial decrease in these rates. The campaign to make childbirth safe for everyone has led to the development of clinics accessible to those living in more isolated areas and training more midwives to assist in childbirth.

Potential Problems

Low Birth weight

We have been discussing a number of teratogens associated with low birth weight such as cocaine, tobacco, etc. A child is considered low birth weight if he or she weighs less than 5.8 pounds (2500 grams). About 8.2 percent of babies born in the United States are of low birth weight (Center for Disease Control, 2010). 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 for infection. And 67 percent of these babies are also preterm which can make them more at risk for 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, however.

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). 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 lead to preterm birth.

Anoxia

Anoxia is a temporary lack of oxygen to the brain. Difficulty during delivery may lead to anoxia which can result in brain damage or in severe cases, death. Babies who suffer both low birth weight and anoxia are more likely to suffer learning disabilities later in life as well.

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3.7: Childbirth and Assessing the Neonate

Approaches to Childbirth

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 expectant parents and caregivers to prepare to accept their new roles and to get information and training that will assist them for delivery and life with the baby as much as possible. The more parents and caregivers can learn about childbirth and the newborn, the better prepared they will be for the adjustment they must make to a new life. Once the knowledge is gained that a child is on the way, people will often 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.

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.

Birthing Centers/Birthing Rooms

The trend now is to have birthing rooms that are hospital rooms that look more like a suite in a hotel equipped with a bed that can be converted for delivery. These rooms are also equipped with a bed and monitoring systems for the newborn. However, many hospitals have only one or two of these rooms and availability can be a problem.

The LeBoyer Method

Other birthing options include the use of birthing chairs, which make use of gravity in assisting the woman giving birth and the Leboyer Method of "Gentle Birthing". This method involves giving birth in a quiet, dimly lit room and allowing the newborn to lie on the mother's stomach with the umbilical cord intact for several minutes while being given a warm bath.

Home Birth and 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). Since that time, nurse-midwives have found it more difficult to sustain practices with the high costs of malpractice insurance. (Many physicians have changed areas of specialization in response to these costs as well.) Women who are at low risk for birth complications can successfully deliver under the care of nurse-midwives but only 1 percent of births occur at home. 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 out of a hospital in the United States. Two-thirds of these are homebirths and more than half of these are assisted by midwives. Midwives are trained and licensed to assist in delivery and are far less expensive than the cost of a hospital delivery. One-third of out-of-hospital births occur in freestanding clinics, birthing centers, or in physicians offices or other locations.

Breech Delivery

Before discussing the stages of labor, we should take a moment to note that some deliveries are "breech". [Febrasgo \(2015\)](#) describes this condition as follows:

Breech delivery, with incidence ranging from 3 to 4% in term gestations, is the second most common delivery presentation. It is a condition in which the baby, at the time of birth, exits the mother's pelvis buttocks- or feet-first. Based on the relation between the baby's lower limbs and the bottom, breech presentation can be classified as: complete (the baby's hips and knees are flexed so that the baby is sitting with feet beside the bottom), and incomplete breech (the baby's legs are folded flat up against the chest); most breech babies are in the incomplete breech position, with bottom coming first.

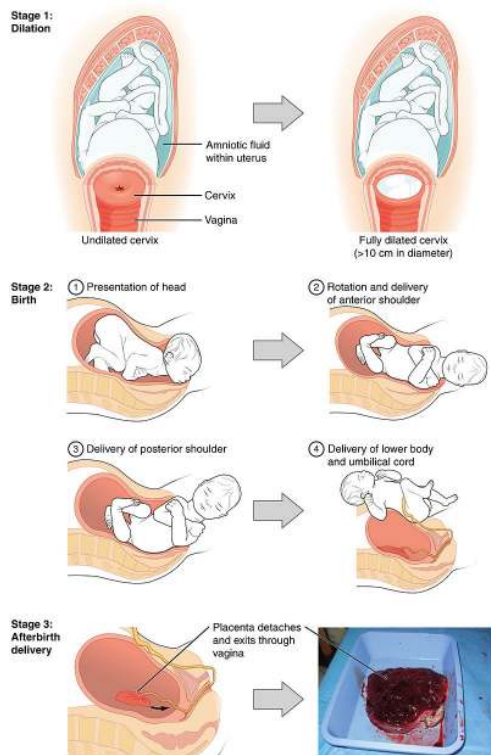
Today, the option to deliver a breech baby vaginally is not offered in most cases. The safest way for a breech baby to be born is by C-section (explained below). The danger of breech birth is mostly due to the fact that the largest part of a baby is its head. When the breech baby's pelvis or hips deliver first, the woman's pelvis may not be large enough for the head to be delivered also. This can result in a baby getting stuck in the birth canal, which can cause injury or death. The umbilical cord may also be damaged or blocked. This can reduce the baby's oxygen supply. (Source: MedlinePlus, National Library of Medicine)

As the Breech position is not ideal for delivery, efforts may be made to reorient the baby or a Caesarean section ("C-section") may be planned or required. A C-section is a surgical procedure that involves removing the baby following an incision made in the abdomen. A 2008 article provides some insight into concerns associated with the use of C-sections - in addition to the general issue with making birthing a surgical procedure - and proposed mechanisms for making the C-section more birth-like.

Although much effort has gone into promoting early skin-to-skin contact and parental involvement at vaginal birth, caesarean birth remains entrenched in surgical and resuscitative rituals, which delay parental contact, impair maternal satisfaction and reduce breastfeeding. We describe a 'natural' approach that mimics the situation at vaginal birth by allowing (i) the parents to watch the birth of their child as active participants (ii) slow delivery with physiological autoresuscitation and (iii) the baby to be transferred directly onto the mother's chest for early skin-to-skin. Studies are required into methods of reforming caesarean section, the most common operation worldwide.

From: Smith J, Plaat F, Fisk N. [The natural caesarean: a woman-centred technique](#). BJOG 2008;115:1037–1042.

The Process of Delivery



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 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. Labor may also be signaled by a bloody discharge being expelled from the cervix. In one out of 8 pregnancies, the amniotic sac or water in which the fetus is suspended may break before labor begins. In such cases, the physician may induce labor with the use of medication if it does not begin in order to reduce the risk of infection. Normally this sac does not rupture until the later stages of labor.

The first stage of labor is typically the longest. 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, 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 pregnant person pushes and relaxes as directed by the professionals assisting. 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 third stage is relatively painless. During this stage, the placenta or afterbirth is delivered. This typically happens within 20 minutes after delivery. If an episiotomy was performed it is stitched up during this stage.

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 is 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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3.8: Prenatal Development - Final Notes

Summary of Content

This week's reading was content heavy and I have provided a summary for consolidation of the material for you.

The epigenetic framework is an important tool for helping us understand the interplay between nature (or heredity) and nurture (or the environment). The terms suggest that the environment can trigger genetic potential.

Most human features are the product of several genes or are polygenic. And if you consult the causes of many diseases, you will find that they are caused by many factors or are multifactorial. Some examples include diabetes and heart disease. Some people are genetically more at risk, but lifestyle increases risk.

The basic building blocks of development are **chromosomes** and **genes**.

Chromosomes are long strands of DNA (deoxyribonucleic acid) which contains the blueprint or genetic code for our construction. Normal human cells (other than reproductive cells) have 46 chromosomes or 23 pair of chromosomes.

Genes are specific units on the strands of DNA. There are about 25,000-30,000 different human genes.

The Human Genome Project is an international research designed to explore and map the human genome. This mapping progressed rapidly and now there are questions and concerns about how to use the findings in an ethical, nondiscriminatory way. Questions about how to use this information in employment, insurance coverage, adoption, and other areas are still being considered.

Conception is the process whereby genetic material from our genetic "parents" are combined to make up our own unique genetic code. This diagram of the female reproductive system shows the location of the female's eggs or ova in the ovaries. Each month a ripened egg is released from one of the ovaries and is drawn into the fallopian tubes. The male's genetic material is housed in sperm and released into the vagina during ejaculation. Millions of sperm are released but only one will reach the egg, usually in the fallopian tube as it travels toward the uterus. The fertilized egg or zygote then becomes imbedded in the lining of the uterus where growth continues.

Gametes are reproductive cells. The **sperm** is the male reproductive cell. The **ova** are female reproductive cells. Gametes contain 23 chromosomes which is half the number of normal human cells. Sperm are produced beginning in puberty, at around age 12 in males, in a process known as spermatogenesis. Females are born with all of their eggs (about 300,000 to 400,000) but only about 400 of these eggs will ripen and mature, a process known as oogenesis, beginning at puberty. One of these ripened eggs is released each month during ovulation.

The fertilized egg is called a zygote. Fertilization typically occurs in the fallopian tube. A tubal or ectopic pregnancy occurs if the zygote becomes imbedded in the fallopian tube rather than in the uterus. These pregnancies are usually nonviable and very painful.

Meiosis is a process in which genetic material from sperm and egg combine. After the 5th doubling of cells containing this combined material, cells begin to migrate and differentiate into layers that serve as the rudiments of organ tissue.

What determines the chromosomal sex of the child?

Twenty-two chromosomes from each "parent" are similar in length. You see these matched in this image on the right known as a karyotype. The twenty-third pair of chromosomes contains either two x chromosomes or an x and a y. Half of sperm contain a y chromosome. All of the ova contain x chromosomes. If the 23rd position contains two x chromosomes, the child will usually be termed "female". If it contains an x and a y, the child will usually be termed "male".

Monozygotic (mono means one, zygote means fertilized egg) twins are genetically identical. They occur when a single fertilized egg splits apart after conception and each begin to develop. Identical twins are less common than non-identical twins and usually share the same phenotype (appearance). **Dizygotic twins** occur when two eggs are released and fertilized by two separate sperm. They do not share the same DNA. Rather, they are as genetically similar as would be any two siblings with the same biological parents. These are more common than identical twins and are becoming increasingly common with the use of fertility drugs that stimulate the release of eggs. There are also other possibilities, such as twins who share a fused placenta.

The word **genotype** refers to the actual genetic material contained in your cells. It is your genetic code. The word **phenotype** refers to the physical traits that are actually expressed in a person. It's what you see when you look at the person next to you. Why is it

that all of your genetic coding is not expressed?

What determines the expression of genes?

Some traits are expressed based on an additive pattern or the average of all of the genes you have inherited through the generations. Height and skin tone are traits that follow such a pattern. (Of course, your actual height can also be reduced without adequate nutrition.)

Other traits follow a dominant/recessive pattern which means that if dominant gene is paired with a recessive gene on your chromosomes, the dominant gene will be expressed. Curly hair is dominant gene linked. Red hair is a recessive trait. Some genes are expressed even though a particular member of a pair (or allele) is not totally dominant. Some alleles share dominance. For example, having wavy rather than straight or curly hair may be a result of partial dominance. Environmental factors can also trigger our make-up. One example is the relationship between oxygen deprivation triggering pain for those with sickle cell anemia.

Let's explore prenatal development. Prenatal development is divided into three periods: the germinal period, the embryonic period, and the fetal period.

The **germinal period** begins at conception and continues until the organism is attached to the lining of the uterus, about 14 days. During the germinal period, cells first make copies of them and then after reaching about 100 cells in number, begin to differentiate or specialize. The failure rate of organisms during this period is quite high at roughly 60 to 70 percent.

Once the organism is embedded in the lining of the uterus, it is referred to as an **embryo**. This lasts from the 3rd through the 8th week of development. During this period, all of the major structures of the body begin to form. This development occurs in two directions, from the midline outward (proximodistal development) and from head to tail, known as cephalocaudal development. The failure rate during this stage is about 20 percent. At the end of this stage, the embryo takes on a distinctly human appearance.

The longest period of prenatal development is the **fetal period** which begins at the 9th week after conception and lasts until birth. By the 12th week, the genitals have formed. Development of all the structures of the body continues and by the end of the third month, all structures are present although immature. The 4th through the 6th month (also known as the second trimester of pregnancy) is a pivotal time. Reflexive action, sleep patterns, hearing, and dramatic spurts in the growth of the brain occur in this time frame. The fetus reaches the age of viability or the first chance of surviving outside the womb at about 24 weeks after gestation. During the last 3 months of development, the fetus gains weight and organ systems (particularly the digestive and respiratory systems) continue to mature. About 5 percent of fetuses fail during this period. Usually before 22 weeks.

Teratology is the study of factors that can contribute to birth defects. These can include pollutants, exposure to harmful substances such as drugs and alcohol, and maternal diseases.

The risks associated with teratogens depend on a number of variables. First is the timing of the exposure to a teratogenic substance. The structures that are forming are the most vulnerable to severe teratogenic effects or damage. You will see some of the critical periods for various structures in the following slide. The amount of exposure that can have a teratogenic effect depends on the size and metabolism of the mother. Genetics can also play a role in determining risk as is evidenced in the differences of defects found in dizygotic twin studies. Both have been exposed to the same prenatal environment, but the extent of damage can vary.

The most commonly used teratogen is alcohol. The effects of alcohol use are most significant if the mother drinks early in pregnancy, especially in the 2nd month of development. Moderate to heavy drinking has been associated with fetal alcohol damage.

Some problems associated with fetal alcohol spectrum disorders include learning difficulties, impaired motor skills (for example, a newborn may have trouble sucking), a flattened nose, widely spaced eyes, a small head, long term psychosocial problems such as social relationships or behavior in school, and neurological, kidney, bone and heart problems. Fetal alcohol spectrum disorders are the leading cause of intellectual developmental delay.

The use of tobacco early in pregnancy is associated with stunted growth. A mother who smokes later in her pregnancy can have a low birth weight baby. Placenta previa, SIDS, and neurological problems have also been associated with tobacco use.

Prescribed and over the counter medications can also be damaging. Good prenatal care and heading warning labels on those drugs is important for pregnant mothers. Illegal drugs such as heroin, cocaine, and marijuana are also damaging. Heroin addiction can be passed on to the baby and is associated with preterm birth. Cocaine use is associated with stillbirths and low birth weight.

Marijuana use is linked to neurological damage and ADHD. Pollutants and maternal diseases such as rubella can lead to neurological damage and deafness, respectively.

We now turn our attention to pregnancy and childbirth.

Not all people experience pregnancy in the same ways. Some have more discomfort than others. Some commonly experienced discomforts include nausea, heartburn, backache, constipation, shortness of breath, and varicose veins. Nausea is common early in pregnancy as estrogen levels rise. The other symptoms increase as the baby grows and puts pressure on the body. These symptoms are rarely treated, however. Exercise, keeping one's feet elevated, and delivery will ultimately relieve these symptoms.

Major complications of pregnancy include severe vomiting which can lead to dehydration. Threatened abortion occurs when the body begins to produce contractions early in the pregnancy. The pregnant person may be advised to stay in bed, but sometimes a spontaneous miscarriage occurs. Preeclampsia is a condition that can occur after 20 weeks of pregnancy and involves headaches, increased blood pressure, swelling or edema, and a buildup of protein in the urine as the kidneys lose their ability to filter urine. An ectopic or tubal pregnancy in the fallopian tube and is typically surgically removed. Maternal mortality rates are very high in many parts of the world. A thousand women a day die in childbirth due to infection, excessive bleeding, and other complications of pregnancy.

Low birth weight babies weigh less than 5.8 pounds or less than 2500 grams. About 8.2 percent of babies in the United States are of low birth weight. Low birth weight is associated with smoking, alcohol use, poor nutrition, drug use, disease and infection. Low birth weight can result in infant mortality, respiratory infection (particularly if the baby is also preterm), and longer term developmental delay. Very low-birth weight babies are more at risk of developing cerebral palsy. Preterm babies are born before completing 37 weeks of development. About 13 percent of babies in the United States are preterm. Preterm babies are more at risk for low birth weight. Fetal anoxia or oxygen deprivation during delivery can lead to brain damage.

Now let's explore a variety of **approaches to childbirth**. In the United States, there has been an emphasis on education or "prepared" childbirth to train couples about what to expect during labor and delivery.

Fernand Lamaze, a French obstetrician, visited Russia and was impressed with their techniques of childbirth. He brought the principles of teaching a mother how to be in control during delivery, using a variety of breathing techniques to manage pain, and of having a coach to assist during delivery to his teaching about childbirth. His technique, known as the **Lamaze Method**, has been taught in the United States since the late 1950s.

There are many other approaches to childbirth. The LeBoyer method emphasizes gentle birthing under soft lighting and a soothing environment. Home births represent about 1 percent of all births in the United States. The majority of these are assisted by midwives.

About 1/3rd occur in free-standing birthing centers.

These are the stages of a normal delivery.

The **first stage** is the longest stage and can last on average about 12-16 hours for first babies and 6-9 hours for subsequent children. During this stage, the uterus begins to contract and as labor progresses; contractions last longer and come more frequently. Minute long contractions that come 5 minutes apart are often used as the point at which to start preparing for delivery and to call your physician or midwife if available. The cervix or opening to the uterus begins to dilate to about 10 centimeters or just less than 4 inches in diameter. This stage may also be signaled by a bloody discharge or release of amniotic fluid if the amniotic sack breaks. In this case, labor must be induced if contractions aren't progressing to reduce the risk of infection.

The **second stage** lasts about 10-40 minutes and involves the passage of the baby through the birth canal. In a normal delivery, the head is delivered first and the mother is encouraged to push and relax through contractions. A surgical incision known as an episiotomy may be made to extend the vaginal opening if needed.

The **third stage** involves the delivery of the placenta or afterbirth. If an episiotomy has been performed, it is now sutured. This is typically a relatively painless stage.

The condition of the newborn is often assessed at 1 minute and 5 minutes after delivery using the APGAR. The APGAR scale is a measure of heart rate, respiration, muscle tone, reflex response, and color. A skilled practitioner can conduct the APGAR easily and quickly. The newborn is given a score of 0 to 2 on each of the measures. A perfect APGAR would be a score of 10. But few babies receive a 10 on their first reading. Less than five is a cause for concern. The score should improve upon the second reading.

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3.9: Prenatal Development - References

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CHAPTER OVERVIEW

4: Infancy

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4.1: Infancy - What Will You Learn?

After reading "Infancy" you should be able to:

1. Summarize overall physical growth during infancy
2. Describe the growth of the brain during infancy.
3. Discuss how we know what the newborn knows.
4. Contrast development of the senses in newborns.
5. Compare gross and fine motor skills and give examples of each.
6. Explain the merits of breastfeeding.
7. Describe the characteristics of Piaget's sensorimotor stage.
8. Describe stages of language development during infancy.
9. Define babbling, holophrastic speech, and overregularization.
10. Contrast styles of attachment.
11. Discuss the importance of temperament and goodness of fit.
12. Describe self-awareness, stranger wariness, and separation anxiety.
13. Use Erikson's theory to characterize psychosocial development during infancy.



Figure 4.1.1 (Unsplash license: [Mahmud Ahsan](#) via [Unsplash](#))

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4.2: Physical Development During Infancy

We begin our exploration of postnatal development with an in-depth look at infancy and toddlerhood. We'll consider the many dramatic changes that take place from birth until about two years of age. Researchers have given this part of the life span more attention than any other period, perhaps because changes during this time are so dramatic and so noticeable - and perhaps because we have assumed that what happens during these years provides a foundation for one's life to come. However, it has been argued that the significance of development during these years has been overstated. Nevertheless, this is a period of life that contemporary educators, healthcare providers, and parents have focused on most heavily. We will examine growth and nutrition during infancy, cognitive development during the first 2 years, the abilities and preferences of the neonate, and then turn our attention toward attachments formed in infancy.

Overall Physical Growth

The average newborn in the United States weighs about 7.5 pounds and is about 20 inches in length. 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/caregivers, but can be cause for concern for those who have a smaller infant. This weight loss is usually temporary, however, and is followed by a rapid period of growth. By the time an infant is 4 months old, they usually double in weight and by one year have tripled the birth weight. By age 2, the weight has quadrupled. The average length of the child at one year is about 26-32 inches.



Figure 4.2.1: At what age can a baby wink at you - with meaning? (Unsplash license; [Omar Lopez](#) via [Unsplash](#))

Body Proportions

Another dramatic physical change that takes place in the first several years of life is the change in body proportions. The head initially makes up about 50 percent of our entire length when we are developing in the womb. At birth, the head makes up about 25 percent of our length (think about how much of your length would be head if the proportions were still the same!). By age 25 it comprises about 20 percent our length. Imagine now 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 the stomach trying to raise the head, you know how much of a challenge this is.

The Brain in the First Two Years

Some of the most dramatic physical change that occurs during this period is in the brain. At birth, the brain is about 25 percent of its adult weight and this is not true for any other part of the body. By age 2, it is at 75 percent its adult weight, at 95 percent by age 6 and at 100 percent by age 7 years.

While most of the brain's 100 to 200 billion neurons are present at birth, they are not fully mature and during the next several years dendrites or connections between neurons will undergo a period of transient exuberance or temporary dramatic growth. **Neurons**, or nerve cells, are the smallest functional unit in the nervous system. The simplest of neurons consist of a cell body that has extensions called **dendrites** that receive information from other neurons. And an **axon** that carries information away from the cell body. The exchange of information between neurons happens at **synapses**.

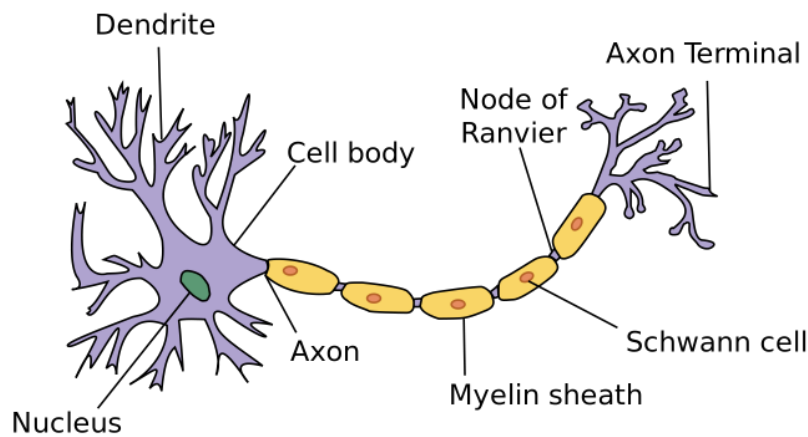


Figure 4.2.2: In a neuron, dendrites receive information and axons send information. (CC BY-SA; NA via US National Cancer Institute's SEER Program)

There is a proliferation of dendrites during the first two years so 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 (a process called synaptic pruning which refers to the process by which extra neurons and synaptic connections are eliminated in order to increase the efficiency of neuronal transmissions) thereby making those that are used much stronger. This activity is occurring primarily in the cortex (the outer covering of the brain). The prefrontal cortex that is located behind our forehead continues to grow and mature throughout childhood and experiences an additional growth spurt during adolescence. It is the last part of the brain to mature and will eventually comprise 85 percent of the brain's weight. 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). As the prefrontal cortex matures, the child is increasingly able to regulate or control emotions, to plan activity, strategize, and have better judgment. Of course, this is not fully accomplished in infancy and toddlerhood (not by a long stretch!), but continues throughout childhood and adolescence.

Another major change occurring in the central nervous system is the development of **myelin**, a coating of fatty tissues around the axon of the neuron. Myelin helps insulate the nerve cell and speed the rate of transmission of impulses from one cell to another. This enhances the building of neural pathways and improves coordination and control of movement and thought processes. The development of myelin continues into adolescence but is most dramatic during the first several years of life.

From Reflexes to Voluntary Movements

Infants are equipped with a number of **reflexes** which are involuntary movements in response to stimulation. These include the **sucking reflex** (infants suck on any objects that touch their lips automatically), the **rooting reflex**, which involves turning toward any object that touches the cheek, the **palmar grasp** (the infant will tightly grasp any object placed in its palm), and the **stepping reflex** (also called the dancing reflex) that happens when the infant is held up in a standing position and moves their feet up and down alternately as if stepping or dancing. 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.

Primitive Reflexes (wikipremid.com)

Primitive reflexes are reflex actions originating in the central nervous system that are exhibited by normal infants, but not neurologically intact adults, in response to particular stimuli.

- A reflex action by which an infant turns its head toward anything that strokes its cheek or mouth, the **rooting reflex** is present at birth and disappears around four months of age.
- The **Moro reflex** is an infantile reflex normally present in all infants/newborns up to 4 or 5 months of age as a response to a sudden loss of support. It involves three distinct components: spreading out the arms, unspreading the arms, and crying.
- An upward response (extension) of the big toe when the sole of the foot is stimulated with a blunt instrument is known as the **Babinski sign (or reflex)**, which can identify disease of the spinal cord and brain in adults, and also exists as a primitive reflex

in infants.

 [Summary of the signalling pathways in the neural stem cell microenvironment.](#)

Babinski's Sign in a healthy newborn.

Lifelong Reflexes (medlineplus.gov)

The presence and strength of a reflex is an important sign of nervous system development and function. Many infant reflexes disappear as the child grows older, although some remain through adulthood. A reflex that is still present after the age when it would normally disappear can be a sign of brain or nervous system damage.

Examples of reflexes that last into adulthood are:

- Blinking reflex: blinking the eyes when they are touched or when a sudden bright light appears
- Cough reflex: coughing when the airway is stimulated
- Gag reflex: gagging when the throat or back of the mouth is stimulated
- Sneeze reflex: sneezing when the nasal passages are irritated
- Yawn reflex: yawning when the body needs more oxygen

Gross Motor Skills

These voluntary movements 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. 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!

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. 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. 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.

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4.3: Sensation and Perception in Infancy

Sensation Vs Perception

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. Although vision is their least developed sense, newborns already show a preference for faces. Babies who are just a few days old also 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). Newborns also have a strong sense of smell. For instance, newborn babies can distinguish the smell of their own mother from that of others. In a study by MacFarlane (1975), 1-week-old babies who were being breastfed were placed between two gauze pads. One gauze pad was from the bra of a nursing mother who was a stranger, and the other gauze pad was from the bra of the infant's own mother. More than two-thirds of the week-old babies turned toward the gauze pad with their mother's scent.

In order to detect external stimuli (things in the environment), sensory receptors and organs must be fully functional. In other words, in order to see you must have photoreceptors (rods and cones, the sensory receptors for light) and a fully developed eye. Sensation is merely receiving that information from the outside world. After sensation we have perception, making sense of that information - adding meaning to it. Perception refers to the interpretation of the sensory information received and happens in the brain. In other words, perception is more complicated. One of the most interesting things to examine in infants is the stimuli that are drawn to - what are babies programmed to notice and like? And how do we "ask" the nonverbal infant about what it prefers?

Sensory Development

Vision

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. 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 another less detailed part of the face. However, by 2 or 3 months, they will seek more detail when exploring an object visually and begin showing preferences for unusual images over familiar ones and for patterns over solids and 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 do 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, and Knill, 2001). When the infants begin to crawl has been found to be the best predictor of avoid depth (Richards and Rader, 1983), suggesting that experience plays a role in the development of depth perception.

Hearing

The infant's sense of hearing is very keen at birth. The ability to hear is evident 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. 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.

Other senses

Newborns can distinguish between sour, bitter, sweet, and salty flavors and show a preference for sweet flavors! They are sensitive to touch and can distinguish between their primary caregiver's scent and that of others.



Figure 4.3.1: Even newborns prefer sweets. (Unsplash license; [Henley Design Studio](#) via [Unsplash](#))

Infant Abilities and Preferences

How do we know what the infant can see, hear, smell, or taste? While sensory receptors and organs may be formed and functional, how do we know what distinctions a baby can make or what it prefers? Researchers have developed a number of techniques for exploring such things. **Habituation**, for example, is one such approach. When a stimulus is first presented, there is a response to it. Over time, habituation is seen - a decrease in the response to that stimulus. If the stimulus is then changed, we see a new response as **dishabituation** occurs. Habituation protects us from being overwhelmed and distracted by elements of the environment. When you first put on a tight shoe or an itchy shirt, it initially bothers you. But, over time, you habituate to that stimulus and no longer react to it. Observing changes in responsiveness to stimuli is one means of informing our understanding of infant abilities. The representative studies provided here demonstrate other approaches.

Visual Preference Method

According to the APA (American Psychological Association) Dictionary of Psychology, the "[preferential looking technique](#)" is ... "an experimental method for assessing the perceptual capabilities of nonverbal individuals (e.g., human infants, nonhuman animals). Infants will preferentially fixate a 'more interesting' stimulus when it is presented at the same time with a 'less interesting' stimulus, but only if the stimuli can be distinguished from one another. To minimize bias, on each trial the investigator is positioned so that he or she can observe the infant and make a judgment about which stimulus the infant fixates, but the stimuli themselves are visible only to the infant." In other words, researchers can use the time spent looking at a stimulus as a means of quantifying their attention and as a means of telling what differences they are capable of detecting. This method has been used to demonstrate that newborns are more interested in faces and face-like stimuli. This same method has been used to demonstrate that infants seem to prefer prosocial behaviors (subjects doing nice or helpful things for others) and that events that are nonsensical are more interesting.

Robert L. Fantz (1925-1981) was a developmental psychologist who launched several studies on infant perception including the preferential looking paradigm. Fantz introduced this paradigm in 1961 while working at the Case Western Reserve University. The preferential looking paradigm is used in studies of infants regarding cognitive development and categorization. Fantz's study showed that infants looked at patterned images longer than uniform images. He later built upon his study in 1964 to include habituation situations. These situations exhibited an infant's preference for new or unusual stimuli.

Orienting and Tracking Responses

One of the simplest ways of testing an infant's ability to see or hear something is by presenting the infant with a stimulus and observing whether or not the infant turns its head towards this stimulus. This orienting response is a simple way to test the infant's ability to sense a stimulus. Assessing whether or not an infant can visually track a stimulus, follow that stimulus with its eyes, is another way to test what the infant can see.

High Amplitude Sucking

High amplitude sucking is a means of detecting habituation - or dishabituation. A mechanical nipple is used to measure the infant's "suck rate". When a novel stimulus is presented, suck rate increases and, eventually, they habituate to that stimulus and the rate declines. When a new stimulus is presented (and detected) the rate increases. This technique has been used to explore the ability of an infant to tell voices apart and to differentiate between similar sounds. In experiments that measure an infant's "suck rate", a mechanical nipple is used to detect the infant's response.

Visual Cliff

The visual cliff is a technique designed to determine whether or not an infant can perceive depth. The infant is tested to see whether or not it will crawl across a piece of clear plexiglass. This technique has been used to detect the ability to perceive depth in a variety of species.

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4.4: Nutrition in Infancy and Cognitive Development

Nutrition

Breast milk is, in most cases, considered the ideal diet for newborns. It has the right amount of calories, fat, and protein 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 a resistance against many diseases, it is more easily digested by infants than is formula, and it helps babies make a transition to solid foods more easily than if bottle fed.

As summarized in the [U.S. Department of Health and Human Services' National Prevention Strategy](#) (2011, p.37):

For nearly all infants, breastfeeding is the best source of nutrition and immunologic protection, and also provides health benefits to mothers (e.g., faster weight loss, reduced risk of breast and ovarian cancers).²¹⁰ Institutional changes in maternity care practices (e.g., helping mothers initiate breastfeeding within one hour of birth, referring mothers to breastfeeding support groups) increase breastfeeding initiation and duration rates. Support is important to help new mothers establish and continue breastfeeding as they return to work or school. Lactation policies that provide private space and flexible scheduling and that offer lactation management services and support (e.g., breastfeeding peer support programs) can make it easier for a mother to breastfeed.



Figure 4.4.1: In order to increase breastfeeding, it is important that mothers feel comfortable doing so in public places. (Unsplash license; [Dave Clubb](#) via [Unsplash](#))

What are the recommendations for breastfeeding?

In the United States, the American Academy of Pediatrics (AAP) currently recommends:¹

- Infants should be fed breast milk exclusively for the first 6 months after birth. Exclusive breastfeeding means that the infant does not receive any additional foods (except vitamin D) or fluids unless medically recommended.
- After the first 6 months and until the infant is 1 year old, the AAP recommends that the mother continue breastfeeding while gradually introducing solid foods into the infant's diet.
- After 1 year, breastfeeding can be continued if mutually desired by the mother and her infant.

The World Health Organization currently promotes as a global public health recommendation that:²

- Infants be exclusively breastfed for the first 6 months after birth to achieve optimal growth, development, and health.
- After the first 6 months, to meet their evolving nutritional requirements, infants should receive nutritionally adequate and safe complementary foods while breastfeeding continues for up to 2 years of age or beyond.

However, most mothers who breastfeed in the United States stop breast feeding at about 6-8 weeks, often in order to return to work outside the home. 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 breast feed, the outside world is less supportive of such efforts. Some workplaces support breastfeeding mothers by providing flexible schedules and welcoming infants, but sadly, most do not. And public support

of breastfeeding is still widely lacking, although social awareness of this issue seems to be changing perceptions in positive ways. 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.

One early argument given to promote the practice of breastfeeding was that it promoted bonding and healthy emotional development for infants. However, this does not seem to be the case. Breastfed and bottle-fed infants adjust equally well emotionally (Ferguson and Woodward, 1999). This is good news for mothers who may be unable to breastfeed for a variety of reasons and for fathers and other caregivers who might feel left out as a result.

In addition to the nutritional 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. Breastfeeding also stimulates contractions in the uterus to help it regain its normal size. And women who breastfeed are more likely to space their pregnancies further apart.

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 (education in this area has since changed). In the late 1960s and 1970s, greater emphasis began to be 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, women 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 to get used 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.

Global Considerations and Malnutrition

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. Rates of breastfeeding declined in Peru from 90 percent to 10 percent in just 8 years' time (Berger, 2001). 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 may not understand the benefits of breastfeeding and have to be encouraged and supported in order to promote this practice. Breastfeeding could save the lives of millions of infants each year, according to the World Health Organization, yet fewer than 40 percent of infants are breastfed exclusively for the first 6 months of life. Find out more at the [WHO's 10 facts on breastfeeding](https://www.who.int/news-room/fact-sheets/detail/breastfeeding). Most women can breastfeed (if the case is that they are physically able) unless they are receiving chemotherapy or radiation therapy, have HIV, are dependent on illicit drugs, or have active, untreated tuberculosis.

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.



Figure 4.4.2: Kwashiorkor (Photo Courtesy Centers for Disease Control and Prevention)

Cognitive Development in Infancy - Piaget and Sensorimotor Intelligence

Remember our discussion of sensorimotor development during the first two years of life? Piaget describes intelligence in infancy as sensorimotor or based on direct, physical contact. Infants taste, feel, pound, push, hear, and move in order to experience the world. Let's explore the transition infants make from responding to the external world reflexively as newborns to solving problems using mental strategies as two-year-olds.

As discussed earlier, Piaget believed his stages were biologically defined and that children pass through them in a very specific way. He also proposed that they construct their knowledge of the world through two processes, assimilation and accommodation. **Assimilation** refers to incorporating new knowledge into your existing knowledge without changing it. We can think of this knowledge in terms of **schemes** - mental or physical ways of interacting with the world. In this 1st stage, we see assimilation when an infant mouths a block or a ball in the same way it mouths a pacifier. The knowledge is the infant's approach to exploring - and the infant does the same thing no matter what the object. When an infant encounters something that causes that approach to change - such as discovering that it hurts to mouth some things, then we have accommodation. **Accommodation** happens when the knowledge changes due to a new experience.

Stage One: Reflexive Action: (Birth through 1st month)

This active learning begins with automatic movements or reflexes. 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!

Stage Two: First Adaptations to the Environment (1st through 4th month)

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. At first, most actions have to do with the body, but in months to come, will be directed more toward objects.

Stage 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. Repeated motion brings particular interest as the infant is able to bang two lids together from the cupboard when seated on the kitchen floor.

Stage Four: New Adaptations and Goal-Directed Behavior (8th through 12th months)

Now the infant can engage in behaviors that others perform and anticipate upcoming events. 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. The object continues to exist in the infant's mind even when out of sight and the infant now is capable of making attempts to retrieve it. Here is an example of a lack of object permanence.

Was Piaget Correct?

Infants seem to be able to recognize that objects have permanence at much younger ages (even as young as 3.5 months of age). Dr. Rene Baillargeon explains in the following clip:



Video 4.4.1: Object Concept VOE Ramp Study Baillargeon

Stage Five: Active Experimentation of Little Scientists (12th through 18th months)

Infants from one year to 18 months of age more actively engage in experimentation to learn about the physical 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.

Stage 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 in vain to push the door or turn the doorknob, the child carries out a mental strategy to get the door opened and 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. 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 intelligence that we will discuss in the next lesson. Part of this stage involves learning to use language.

Conclusions About Piaget

Piaget is noteworthy as he proposed a comprehensive view of how thinking (cognition) develops. And as the pioneer in this area of study, his ideas have been tested extensively. While it appears that he underestimated infants, we'll discover that he ultimately overestimates teens. While aspects of his theory may need modification, it does provide us with a way of thinking about infant thinking. In infancy, knowing is sensing and doing - and object permanence is lacking. Mental representation, actual thinking, begins as we move to Piaget's next stage, preoperational.

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4.5: Communication in Infancy



Baby at 8 months.

Do newborns communicate? Certainly, they do. They do not, however, communicate with the use of language. Instead, they communicate their thoughts and needs with body posture (being relaxed or still), gestures, cries, and facial expressions. A person who spends adequate time with an infant can learn which cries indicate pain and which ones indicate hunger, discomfort, or frustration.

Intentional Vocalizations: Cooing and taking turns: Infants begin to vocalize and repeat vocalizations within the first couple of months of life. That gurgling, musical vocalization called cooing 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 their 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. Cooing initially involves making vowel sounds like "oooo". Later, consonants are added to vocalizations such as "nananananana".

Babbling and gesturing: 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 grow more accustomed to a particular language. 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.

Understanding: At around ten months of age, the infant can understand more than they can say. 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 to contribute to it.

Holophrastic speech: 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 holophrastic 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. They know that "ju" means "juice" which means the baby wants some milk! 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" which, the parent explains, means "I want some milk when I go with Daddy."

Underextension: 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. Only the family's Irish Setter is a "doggie". This is referred to as underextension.

Underextension occurs when a categorical term (a word used to describe a group of things) is used in language improperly by only using it for one object instead of all objects that belong in that category. This often occurs in children when they are initially acquiring and developing language. Children will frequently not apply a new word to objects that it should be applied to. Another example would be a toddler learning the word ball to describe their toy ball. Underextension occurs when the child uses the word ball in reference to only their specific individual ball and not use it as a term for all balls. Another example would be a child using the word cat for only their family's lone pet cat instead of using it to apply to all cats.

(<https://www.alleydog.com/glossary/definition.php?term=Underextension>)

Underextension declines as children develop and refine their vocabulary.

Overextension: More often, however, a child may think that a label applies to all objects that are similar to the original object. Overextension occurs when a categorical term (a word used to describe a group of things) is used in language to represent more categories than it actually does. This happens in particular with very young children. An example is when a child refers to all animals as 'doggie' or refers to a lion as a 'kitty.' The child is overextending the definition of dog to encompass all animals and using the term 'kitty' for all felines instead of just house cats. (<https://www.alleydog.com/glossary/definition.php?term=Underextension>)

First words and cultural influences: First words, if the child is using English, tend to be nouns. The child labels objects such as cup or ball. 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 relationship 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.

Vocabulary growth spurt: One year olds typically have a vocabulary of about 50 words. But by the time they become toddlers, they have a vocabulary of about 200 words and begin putting those words together in telegraphic speech (I think of it now as 'text message' speech because texting is more common and is similar in that text messages typically only include the minimal amount of words to convey the message).

Two word sentences and telegraphic (text message?) speech: Words are soon combined and 18 month old toddlers can express themselves further by using expressions 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) where unnecessary words are not used. "Give baby ball" is used rather than "Give the baby the ball." Or a text message of "Send money now!" rather than "Dear Mother, I really need some money to take care of my expenses even though you told me last time was the last time and not to ask again." You get the idea.

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** (or more antiquated terms of motherese or parentese). It involves exaggerating the vowel and consonant sounds, using a high-pitched voice, and delivering the phrase with great facial expression. Why is this done? It may be in order to clearly articulate the sounds of a word so that the child can hear the sounds involved. Or it may 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 tuned with one another. When I demonstrate this in class, the students certainly pay attention and look my way. Amazing! It also works in the college classroom!

Theories of Language Development

The first two theories of language development represent two extremes in the level of interaction required for language to occur (Berk, 2007).

Chomsky and the language acquisition device: The view known as nativism advocated by Noam Chomsky suggests that infants are equipped with a neurological construct referred to as the language acquisition device or LAD that makes infants ready for language. Language develops as long as the infant is exposed to it. No teaching, training, or reinforcement is required for language to develop. Chomsky proposed that we are hard-wired to learn language, a conclusion he came to based on the commonalities seen in language learning across cultures and the evidence that children extract the rules of a language and apply them - and even over-apply them.

Skinner and reinforcement: Learning theorist, B. F. Skinner, suggests that language develops through the use of reinforcement. Sounds, words, gestures and phrases are encouraged through by following the behavior with words of praise or treats or any thing that increases the likelihood that the behavior will be repeated. In other words, Chomsky offered a nature-oriented vision of the

origins of language and Skinner proposed that it is all nurture. Clearly environment must play a role as we can only learn those languages we are exposed to, but is language-learning solely dependent on the environment?

Social pragmatics: Another view emphasizes the child's active engagement in learning language out of a need to communicate. The child seeks information, memorizes terms, imitates the speech heard from others and learns to conceptualize using words as language is acquired. Many would argue that all three of these dynamics foster the acquisition of language (Berger, 2004).

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4.6: Attachment Theory

OER Program or Publisher - Noba; Author - R. Chris Fraley

Attachment Through the Life Course

Some of the most rewarding experiences in people's lives involve the development and maintenance of close relationships. For example, some of the greatest sources of joy involve falling in love, starting a family, being reunited with distant loved ones, and sharing experiences with close others. And, not surprisingly, some of the most painful experiences in people's lives involve the disruption of important social bonds, such as separation from a spouse, losing a parent, or being abandoned by a loved one.

Why do close relationships play such a profound role in human experience? Attachment theory is one approach to understanding the nature of close relationships. Here, we review the origins of the theory, the core theoretical principles, and some ways in which attachment influences human behavior, thoughts, and feelings across the life course.



Close relationships are the fabric of society, and are integral to the maintenance of our species. [Unsplash license; [Larry Crayton](#) via [Unsplash](#)]

Attachment Theory: A Brief History and Core Concepts

Attachment theory was originally developed in the 1940s by John Bowlby, a British psychoanalyst who was attempting to understand the intense distress experienced by infants who had been separated from their parents. Bowlby (1969) observed that infants would go to extraordinary lengths to prevent separation from their parents or to reestablish proximity to a missing parent. For example, he noted that children who had been separated from their parents would often cry, call for their parents, refuse to eat or play, and stand at the door in desperate anticipation of their parents' return. At the time of Bowlby's initial writings, psychoanalytic writers held that these expressions were manifestations of immature defense mechanisms that were operating to repress emotional pain. However, Bowlby observed that such expressions are common to a wide variety of mammalian species and speculated that these responses to separation may serve an evolutionary function (note: at that time, it was usually parents who raised their children. In today's times, we recognize that people are raised in diverse ways including by grandparents, family friends, extended family and foster care, to name just some. The term "primary caregiver" is used to honor the fact that someone other than a genetic "parent" may have been the main caretaker of the child).

How it Began

When Bowlby was originally developing his theory of attachment, there were alternative theoretical perspectives on why infants were emotionally attached to their primary caregivers (most often, their genetic mothers at that time). Bowlby and other theorists, for example, believed that there was something important about the responsiveness and contact provided by mothers (important to keep in mind: culture has evolved to recognize men as caregivers as well. The original work was a product of its time, but this theory applies to whomever is the primary caregiver to the child). Other theorists, in contrast, argued that young infants feel emotionally connected to their mothers because mothers satisfy more basic needs, such as the need for food. That is, the child comes to feel emotionally connected to the mother because she is associated with the reduction of primary drives, such as hunger, rather than the reduction of drives that might be relational in nature.

In a classic set of studies, (which is heartbreaking by today's standards) psychologist Harry Harlow placed young monkeys in cages that contained two artificial, surrogate “mothers” (Harlow, 1958). One of those surrogates was a simple wire contraption; the other was a wire contraption covered in cloth. Both of the surrogate mothers were equipped with a feeding tube so that Harlow and his colleagues had the option to allow the surrogate to deliver or not deliver milk. Harlow found that the young macaques spent a disproportionate amount of time with the cloth surrogate as opposed to the wire surrogate. Moreover, this was true even when the infants were fed by the wire surrogate rather than the cloth surrogate. This suggests that the strong emotional bond that infants form with their primary caregivers is rooted in something more than whether the caregiver provides food per se. Harlow’s research is now regarded as one of the first experimental demonstrations of the importance of “contact comfort” in the establishment of infant–caregiver bonds.

Drawing on evolutionary theory, Bowlby (1969) argued that these behaviors are adaptive responses to separation from a primary attachment figure—a caregiver who provides support, protection, and care. Because human infants, like other mammalian infants, cannot feed or protect themselves, they are dependent upon the care and protection of “older and wiser” adults for survival. Bowlby argued that, over the course of evolutionary history, infants who were able to maintain proximity to an attachment figure would be more likely to survive to a reproductive age.

According to Bowlby, a motivational system, what he called the attachment behavioral system, was gradually “designed” by natural selection to regulate proximity to an attachment figure. The attachment system functions much like a thermostat that continuously monitors the ambient temperature of a room, comparing that temperature against a desired state and adjusting behavior (e.g., activating the furnace) accordingly. In the case of the attachment system, Bowlby argued that the system continuously monitors the accessibility of the primary attachment figure. If the child perceives the attachment figure to be nearby, accessible, and attentive, then the child feels loved, secure, and confident and, behaviorally, is likely to explore their environment, play with others, and be sociable. If, however, the child perceives the attachment figure to be inaccessible, the child experiences anxiety and, behaviorally, is likely to exhibit attachment behaviors ranging from simple visual searching on the low extreme to active searching, following, and vocal signaling on the other. These attachment behaviors continue either until the child is able to reestablish a desirable level of physical or psychological proximity to the attachment figure or until the child exhausts themselves or gives up, as may happen in the context of a prolonged separation or loss.

Individual Differences in Infant Attachment



Think of your earliest memory, does it involve just you, or does it include your loved ones, your family and caretakers? (Unsplash license; [Ronak Baheti](#) via [Unsplash](#))

Although Bowlby believed that these basic dynamics captured the way the attachment system works in most children, he recognized that there are individual differences in the way children appraise the accessibility of the attachment figure and how they regulate their attachment behavior in response to threats. However, it was not until his colleague, Mary Ainsworth, began to systematically study infant–parent separations that a formal understanding of these individual differences emerged. Ainsworth and her students developed a technique called the strange situation—a laboratory task for studying infant–parent attachment (Ainsworth, Blehar, Waters, & Wall, 1978). In the strange situation, 12-month-old infants and their parents are brought to the laboratory and, over a period of approximately 20 minutes, are systematically separated from and reunited with one another. In the strange situation, most children (about 60%) behave in the way implied by Bowlby’s normative theory. Specifically, they become upset when the parent/primary caregiver leaves the room, but, when that person returns, they actively seek the parent/caregiver and are easily comforted by them. Children who exhibit this pattern of behavior are often called secure. Other children (about 20% or

less) are ill at ease initially and, upon separation, become extremely distressed. Importantly, when reunited with their parent/caregiver, these children have a difficult time being soothed and often exhibit conflicting behaviors that suggest they want to be comforted, but that they also want to “punish” the parent/caregiver for leaving. These children are often called anxious-resistant. The third pattern of attachment that Ainsworth and her colleagues documented is often labeled avoidant. Avoidant children (about 20%) do not consistently behave as if they are stressed by the separation but, upon reunion, actively avoid seeking contact with their parent/caregiver, sometimes turning their attention to play objects on the laboratory floor.

Ainsworth’s work was important for at least three reasons. First, she provided one of the first empirical demonstrations of how attachment behavior is organized in unfamiliar contexts. Second, she provided the first empirical taxonomy of individual differences in infant attachment patterns. According to her research, at least three types of children exist: those who are secure in their relationship with their parents/caregiver, those who are anxious, and those who are avoidant. Finally, she demonstrated that these individual differences were correlated with infant–parent interactions in the home during the first year of life. Children who appear secure in the strange situation, for example, tend to have parents/caregivers who are consistently responsive to their needs. Children who appear insecure in the strange situation (i.e., anxious or avoidant) often have parents/caregivers who are insensitive to their needs, or inconsistent or rejecting in the care they provide.

Antecedents of Attachment Patterns



Is attachment style multi-generational? How does one person’s childhood attachment style translate to the way they interact with their own children? [Image: CC0 Public Domain, goo.gl/m25gce]

In the years that have followed Ainsworth’s ground-breaking research, researchers have investigated a variety of factors that may help determine whether children develop secure or insecure relationships with their primary attachment figures. As mentioned above, one of the key determinants of attachment patterns is the history of sensitive and responsive interactions between the caregiver and the child. In short, when the child is uncertain or stressed, the ability of the caregiver to provide support to the child is critical for the child’s psychological development. It is assumed that such supportive interactions help the child learn to regulate emotions, give the child the confidence to explore the environment, and provide the child with a safe haven during stressful circumstances.

Evidence for the role of sensitive caregiving in shaping attachment patterns comes from longitudinal and experimental studies. For example, Grossmann, Grossmann, Spangler, Suess, and Unzner (1985) studied parent–child interactions in the homes of 54 families, up to three times during the first year of the child’s life. At 12 months of age, infants and their mothers participated in the strange situation. Grossmann and her colleagues found that children who were classified as secure in the strange situation at 12 months of age were more likely than children classified as insecure to have mothers who provided responsive care to their children in the home environment.

Van den Boom (1994) developed an intervention that was designed to enhance maternal sensitive responsiveness. When the infants were 9 months of age, the mothers in the intervention group were rated as more responsive and attentive in their interaction with their infants compared to mothers in the control group. In addition, their infants were rated as more sociable, self-soothing, and

more likely to explore the environment. At 12 months of age, children in the intervention group were more likely to be classified as secure than insecure in the strange situation.

Attachment Patterns and Child Outcomes

Attachment researchers have studied the association between children's attachment patterns and their adaptation over time. Researchers have learned, for example, that children who are classified as secure in the strange situation are more likely to have high functioning relationships with peers, to be evaluated favorably by teachers, and to persist with more diligence in challenging tasks. In contrast, insecure-avoidant children are more likely to be construed as "bullies" or to have a difficult time building and maintaining friendships (Weinfield, Sroufe, Egeland, & Carlson, 2008).

Attachment in Adulthood

Although Bowlby was primarily focused on understanding the nature of the infant-caregiver relationship, he believed that attachment characterized human experience across the life course. It was not until the mid-1980s, however, that researchers began to take seriously the possibility that attachment processes may be relevant to adulthood. Hazan and Shaver (1987) were two of the first researchers to explore Bowlby's ideas in the context of romantic and/or intimate relationships. According to Hazan and Shaver, the emotional bond that develops between adult intimate partners is partly a function of the same motivational system—the attachment behavioral system—that gives rise to the emotional bond between infants and their caregivers. Hazan and Shaver noted that in both kinds of relationship, people (a) feel safe and secure when the other person is present; (b) turn to the other person during times of sickness, distress, or fear; (c) use the other person as a "secure base" from which to explore the world; and (d) speak to one another in a unique language, called "infant-directed speech" but also often called "motherese" or "parentese."

Attachment and Social Media

Social media websites and mobile communication services are coming to play an increasing role in people's lives. Many people use Facebook, for example, to keep in touch with family and friends, to update their loved ones regarding things going on in their lives, and to meet people who share similar interests. Moreover, modern cellular technology allows people to get in touch with their loved ones much easier than was possible a mere 20 years ago.

From an attachment perspective, these innovations in communications technology are important because they allow people to stay connected virtually to their attachment figures—regardless of the physical distance that might exist between them. Recent research has begun to examine how attachment processes play out in the use of social media. Oldmeadow, Quinn, and Kowert (2013), for example, studied a diverse sample of individuals and assessed their attachment security and their use of Facebook. Oldmeadow and colleagues found that the use of Facebook may serve attachment functions. For example, people were more likely to report using Facebook to connect with others when they were experiencing negative emotions. In addition, the researchers found that people who were more anxious in their attachment orientation were more likely to use Facebook frequently, but people who were more avoidant used Facebook less and were less open on the site.

On the basis of these parallels, Hazan and Shaver (1987) argued that adult romantic relationships, such as infant-caregiver relationships, are attachments. According to Hazan and Shaver, individuals gradually transfer attachment-related functions from parents to peers as they develop. Thus, although young children tend to use their parents as their primary attachment figures, as they reach adolescence and young adulthood, they come to rely more upon close friends and/or romantic partners for basic attachment-related functions. Thus, although a young child may turn to his or her mother for comfort, support, and guidance when distressed, scared, or ill, young adults may be more likely to turn to their romantic partners for these purposes under similar situations.

Hazan and Shaver (1987) asked a diverse sample of adults to read the three paragraphs below and indicate which paragraph best characterized the way they think, feel, and behave in close relationships:

1. I am somewhat uncomfortable being close to others; I find it difficult to trust them completely, difficult to allow myself to depend on them. I am nervous when anyone gets too close, and often, others want me to be more intimate than I feel comfortable being.
2. I find it relatively easy to get close to others and am comfortable depending on them and having them depend on me. I don't worry about being abandoned or about someone getting too close to me.

3. I find that others are reluctant to get as close as I would like. I often worry that my partner doesn't really love me or won't want to stay with me. I want to get very close to my partner, and this sometimes scares people away.

Conceptually, these descriptions were designed to represent what Hazan and Shaver considered to be adult analogues of the kinds of attachment patterns Ainsworth described in the strange situation (avoidant, secure, and anxious, respectively). Hazan and Shaver (1987) found that the distribution of the three patterns was similar to that observed in infancy. In other words, about 60% of adults classified themselves as secure, about 20% described themselves as avoidant, and about 20% described themselves as anxious. Moreover, they found that people who described themselves as secure, for example, were more likely to report having had warm and trusting relationships with their parents/caregivers when they were growing up. In addition, they were more likely to have positive views of intimate relationships. Based on these findings, Hazan and Shaver (1987) concluded that the same kinds of individual differences that exist in infant attachment also exist in adulthood.

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4.7: Attachment in Adulthood, Temperament, and Psychosocial Development

OER Program or Publisher - Noba; Author - R. Chris Fraley

Research on Attachment in Adulthood

Attachment theory has inspired a large amount of literature in social, personality, and clinical psychology. In the sections below, we explore a brief overview of some of the major research questions and what researchers have learned about attachment in adulthood.

Who Ends Up with Whom?



People who had relatively secure attachments as children go on to have more secure intimate attachments. [Image: CC0 Public Domain, goo.gl/m25gce]

When people are asked what kinds of psychological or behavioral qualities they are seeking in a romantic partner, a large majority of people indicate that they are seeking someone who is kind, caring, trustworthy, and understanding—the kinds of attributes that characterize a “secure” caregiver (Chappell & Davis, 1998). But we know that people do not always end up with others who meet their ideals. Are secure people more likely to end up with secure partners—and, vice versa, are insecure people more likely to end up with insecure partners? The majority of the research that has been conducted to date suggests that the answer is “yes.” Frazier, Byer, Fischer, Wright, and DeBord (1996), for example, studied the attachment patterns of more than 83 heterosexual couples and found that, if the man was relatively secure, the woman was also likely to be secure.

One important question is whether these findings exist because (a) secure people are more likely to be attracted to other secure people, (b) secure people are likely to create security in their partners over time, or (c) some combination of these possibilities. Existing empirical research strongly supports the first alternative. For example, when people have the opportunity to interact with individuals who vary in security in a speed-dating context, they express a greater interest in those who are higher in security than those who are more insecure (McClure, Lydon, Baccus, & Baldwin, 2010). However, there is also some evidence that people’s attachment styles mutually shape one another in close relationships. For example, in a longitudinal study, Hudson, Fraley, Vicary, and Brumbaugh (2012) found that, if one person in a relationship experienced a change in security, that person’s partner was likely to experience a change in the same direction.

Relationship Functioning

Research has consistently demonstrated that individuals who are relatively secure are more likely than insecure individuals to have high functioning relationships—relationships that are more satisfying, more enduring, and less characterized by conflict. For example, Feeney and Noller (1992) found that insecure individuals were more likely than secure individuals to experience a breakup of their relationship. In addition, secure individuals are more likely to report satisfying relationships (e.g., Collins & Read, 1990) and are more likely to provide support to their partners when their partners were feeling distressed (Simpson, Rholes, & Nelligan, 1992).

Do Early Experiences Shape Adult Attachment?



Sharing food, celebrations, and traditions are some of the ways we establish secure attachments with our loved ones from an early age. [Image: iwona_kellie, <https://goo.gl/B406LK>, CC BY-NC-SA 2.0, goo.gl/Toc0ZF]

The majority of research on this issue is retrospective—that is, it relies on adults’ reports of what they recall about their childhood experiences. This kind of work suggests that secure adults are more likely to describe their early childhood experiences with their parents as being supportive, loving, and kind (Hazan & Shaver, 1987). A number of longitudinal studies are emerging that demonstrate prospective associations between early attachment experiences and adult attachment styles and/or interpersonal functioning in adulthood. For example, Fraley, Roisman, Booth-LaForce, Owen, and Holland (2013) found in a sample of more than 700 individuals studied from infancy to adulthood that maternal sensitivity across development prospectively predicted security at age 18. Simpson, Collins, Tran, and Haydon (2007) found that attachment security, assessed in infancy in the strange situation, predicted peer competence in grades 1 to 3, which, in turn, predicted the quality of friendship relationships at age 16, which, in turn, predicted the expression of positive and negative emotions in their adult intimate relationships at ages 20 to 23.

It is easy to come away from such findings with the mistaken assumption that early experiences “determine” later outcomes. To be clear: Attachment theorists assume that the relationship between early experiences and subsequent outcomes is probabilistic, not deterministic. Having supportive and responsive experiences with caregivers early in life is assumed to set the stage for positive social development. But that does not mean that attachment patterns are set in stone. In short, even if an individual has far from optimal experiences in early life, attachment theory suggests that it is possible for that individual to develop well-functioning adult relationships through a number of corrective experiences—including relationships with siblings, other family members, teachers, close friends and therapy with a therapist they are comfortable with. Security is best viewed as a culmination of a person’s attachment history rather than a reflection of their early experiences alone. Those early experiences are considered important not because they determine a person’s fate, but because they provide the foundation for subsequent experiences.

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. According to Chess and Thomas (1996), children vary on 9 dimensions of temperament. These include activity level, regularity (or predictability), sensitivity thresholds, mood, persistence or distractibility, among others. 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. These categories are labeled easy or flexible, slow to warm up or cautious, difficult or feisty, and undifferentiated (or those who can't easily be categorized).

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 work well and accurately read the child will enjoy a goodness of fit meaning their styles match and communication and interaction can flow. 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 gain insight to work more effectively with a child.

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.

Psychosocial Development - Erikson's Stages for Infants and Toddlers

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 trustworthy place. The caregiver should not worry about overly indulging a child's need for comfort, contact or stimulation. This view is in sharp contrast with the Freudian view that a parent who overly indulges 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.

Problems Establishing Trust

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 make him or her less desirable to a parent. Unwanted pregnancies can be experienced by busy, upper-middle class professional couples as well as young, unmarried mothers, or couples in the midst of relational strains. Under these circumstances, we cannot assume that the parent is going to provide the child with a feeling of trust. 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. So 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.



Autonomy vs. Shame and Doubt

As the child begins to walk and talk, an interest in independence or autonomy replaces a 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 so doing 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 other's expectation, the caregiver can give the child the message that he or she should be ashamed of their behavior and instill a sense of doubt in their own abilities. Parenting advice based on these ideas would be to keep your toddler safe, but let him or her learn by doing. A sense of pride seems to rely on doing rather than being told how capable one is as well (Berger, 2005).

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4.8: Infancy - Final Notes

Conclusion

We have explored the dramatic story of the first two years of life. Rapid physical growth, neurological development, language acquisition, the movement from hands on to mental learning, an expanding emotional repertoire, and the initial conceptions of self and others make this period of life very exciting. These abilities are shaped into more sophisticated mental processes, self-concepts, and social relationships during the years of early childhood.

Summary

Now we will look closely at the first two years of development known as infancy. Infants and toddlers, or children beginning to learn to walk, are the subject of this lesson.

First, let's explore the dramatic physical growth that occurs in this time period. The average newborn weighs about 7.5 pounds. Most infants range between 6 and 9 pounds at birth. After a few days of moderate weight loss due to the expulsion of waste and getting used to feeding, the infant starts growing rapidly and usually doubles in weight by 4 months. The birth weight is tripled by 12 months so a 7 pound baby now weighs approximately 21 pounds. Most newborns are 19 to 21 inches in length or on average about 20 inches at birth. The typical two year old is 32 to 36 inches in height. There is dramatic change in the body proportions during the first two years. A newborn's head is about 25 percent of its entire length. By adulthood, however, the head is proportionately smaller.

While we may notice changes on the outside of the body, incredible growth is taking place within the brain. The brain is 25 percent its adult weight at birth, but by age 2 it has grown to 75 percent of its adult weight. Much of this growth takes place in the dendrites or the branch-like extensions coming from the neuron. These are the point of entry for chemical messages that are picked up from the surrounding neurons through the synapse. This growth reaches a peak at age 2 and then connections that are not used are pruned away to increase the efficiency of the remaining connections. In this way, experience begins to shape our hard wiring.

Myelin is a fatty substance that coats and insulates the axon of neurons. It speeds up the rate of transmission of the neural impulse and improves functioning. Myelination, or this insulating process, is also occurring in infancy and continues at a less rapid pace into adolescence. Not all parts of the cortex mature at the same rate. The prefrontal cortex located behind the forehead is the last to mature. It is not fully developed for years to come. (We'll look at how it goes through a second period of growth in adolescence.)

Motor development refers to movement. When we are born, we are equipped with a number of automatic responses to stimuli known as reflexes. These include a sucking reflex, the rooting reflex which involves an infant turning the head toward anything that touches the cheek, and a palmar grasp, strongly clasping the hand around anything touching the palm.

After a few days or weeks, reflexive actions begin to be replaced with voluntary movements or motor skills. These skills are not mastered in infancy, however. Motor skill development continues throughout childhood. Gross motor skills are large movements of the body that require large muscles such as those located in the back, legs, and arms.

Fine motor skills are smaller, more precise movements of the hand and fingers. These take longer to acquire as they involve being able to coordinate the hand and eye and being able to manipulate the hands to grab and move small objects.

The newborn's senses are not equally developed at birth. Vision is the least developed sense at birth. Newborn vision would be considered 'legally blind' if found in an adult. Newborns can only focus on objects between 8 and 16 inches away. And they have trouble scanning objects and tracking moving objects visually. Practice and the development of neural connections and myelin will help. The ability to focus both eyes on an object, or use binocular vision, begins at around 14 weeks. Newborns see contrast but do not distinguish between similar hues until they grow a few months older. Hearing, however, is well developed at birth.

Breast milk is considered the ideal diet for newborns. The calories and nutrition provided are perfectly suited for infants. There are numerous other advantages of breastfeeding. These include providing immunity and decreasing the risk of infection in the newborn child. And breastfeeding is free. Most mothers are able to breastfeed, but should be avoided by mothers with HIV or untreated tuberculosis, mothers who are using illicit drugs, and those who are undergoing radiation or chemotherapy treatments. Wet nursing, or the use of wet-nurses (lactating women other than the mother) to feed infants has been a practice found throughout history. Does it exist today? Sometimes breast milk is recommended even if unavailable from the mother. In these cases, human breast milk is

still recommended and is available for use in neonatal care units and other locations where breast milk is needed. Mothers can donate their breast milk for such use. Find out more at prolacta.com.

There are two major concerns of malnutrition found in developing countries. One is infantile marasmus which is overall starvation caused by a lack of caloric intake. Toddlers may suffer from a protein deficiency called kwashiorkor. In the United States, giving children too much milk as toddlers can spoil the appetite for other foods and lead to iron deficiencies seen in early childhood. This is referred to as milk-anemia.

Now we explore cognitive development by focusing on language acquisition and changes in the ability to think and reason. Piaget's stage for infancy is sensorimotor intelligence. Remember that the infant uses senses and motor skills to explore the world.

There are six stages of sensorimotor intelligence.

During these first two sub stages, the infant is focused primarily on their own body. The **first stage** is found in the first month of life. This is a time when reflexive action is used to react to the world. The newborn has few mental concepts or schemes outside of sucking, chewing, rooting and other automatic movements. If any object is placed near the mouth, the infant may turn and begin to suck on it. The infant may cry or grimace if that object is sour or otherwise brings discomfort.

Stage two lasts through the fourth month of development. Now the infant is making first adaptations to the environment. A sour object may now be recognized as something to avoid rather than to suck on. A new schema is built through this process of accommodation.

Stage Three, repeating actions, lasts from the 4th month through the 8th month of development. Now the infant begins to repeat actions to see what effect this might bring. Shaking a rattle, repeating a syllable, or rocking back and forth are examples. The child is increasingly interacting with others in this third and fourth stage.

Stage four lasts from 8 to 12 months and is a time of new adaptations and anticipation. The baby begins to look forward to upcoming events such as taking a walk or a bath. This signals being able to consider the future. Piaget suggested that object permanence, or the knowledge that an object continues to exist even if it cannot be seen, is acquired at this age. Prior to about 8 months of age, the baby who is shown a toy and then blocking the toy from view will rapidly lose interest. Piaget concluded that the baby thinks it no longer exists. After this age, the baby will remove the barrier and seek the toy that is out of view. But infants at much younger ages respond to events that do not seem to be possible. An infant shown a fuzzy red square moving behind a screen and emerging as a yellow circle will look at this event for a long time recognizing that this should not have occurred. A red square that moves behind a screen should still be the same when it reappears.

Stage Five is the stage of experimentation. In stages five and six, the child is busy interacting with the world and making discoveries. Most of these discoveries come in the form of trial and error learning. The child learns about gravity by letting objects drop. Or the child learns that pulling on the dog's ear brings about a cry. This trial and error learning can be very messy as pots and pans and household items are pulled off the shelves and contents are spread all around!

In **stage six**, the child begins to make the transition to thinking in order to solve problems. This lasts from 18-24 months.

The child now uses mental combinations rather than solely relying on trial and error to solve problems. This ability requires the child to see something and then imitate it at some later point. This is called deferred imitation. Here is an example. A child wants to get out of a room but cannot grasp the door knob. After trying to open the door, the child decides to use a technique they remember having witnessed before and knocks on the door. Aha! This brings someone to open the door.

Let's look at how communication develops in the first two years of life. Can newborns communicate? Of course. But they use cries, facial expressions, and body posture to do so. At 2 to 3 months, the baby begins making intentional vocalizations such as cooing or squealing. They laugh and they also learn the pace of speech by taking turns in communication. Deaf babies also vocalize at this age.

Gesturing is an easy way for babies to communicate. At 5 months, the baby points to objects, shows frustration, and delight by waving the arms. Gesturing is so natural to infants that learning sign language has been seen as an effective way to enhance communication at this age.

At around 6 months, the infant begins to babble. Babbling is typically a vowel consonant combination repeated over and over like "nananana" or "gagagaga". These are the precursors to language and gradually only those sounds that are used will be retained.

Deaf babies also babble at this age with gestures that partially indicate a concept or thought. Our understanding of language seems to come before our ability to articulate. Understanding comes before speaking. Have you studied another language? Chances are you were able to understand before you could form communicative sentences in that language.

Our first spoken words seem to emerge at around 12 months of age. The baby may use holophrastic speech which is a single word to convey an entire thought. “Ju” may mean “I’d like some more juice.” or “Where’s my milk?” The meaning has to be interpreted by the listener and this can be very difficult if you’ve not been around that particular baby. Once a label is learned, the baby may underextend or overextend the use of that label. For example, “Mama” may only refer to the child’s mother or “doggie” may be used to describe all of the four legged animals in the zoo. These children typically have a vocabulary of about 50 words. English speaking children tend to have many nouns or labels for objects. Deaf babies’ vocalizations may disappear by age 2.

At 18 months there is a vocabulary growth spurt. Toddlers will use more and more two word sentences that make them easier to understand. Eventually they use more 3 to 5 word sentences in a kind of speech referred to as “telegraphic speech” because it reads much like telegraph-unnecessary words are eliminated. Many people are unfamiliar with telegraphs today, but texting is similar so I call this “text message” speech. Rather than texting, “Hi there.” How are you? What’s been going on with you lately?” We text, “Sup!” You get the idea.

Have you ever witnessed a person talking with a baby? Their facial expressions and intonation probably changed so that they began a kind of sing song talk known as child-directed speech. It goes like this. “Dooooo yooooou like moooooommy’s parettee beeeeeeds?”

Why do people do this? It gets attention. Babies respond to this type of speech in which vowel and consonant sounds are exaggerated and pitch goes up. You may have responded too!

There are several theories of language development. The famous linguist, Noam Chomsky, suggests that our ability to learn language is inborn. We have a neurological construct in our brains known as a language acquisition device. Learning language is simply a matter of being exposed to language. Skinner suggested that language is taught through reinforcement. A child is given praise and hugs for uttering a word and this increases the likelihood that this will be repeated.

Our final angle for understanding infancy is psychosocial development. Let’s examine emotions and relationships in the first two years of life.

Newborns demonstrate a number of emotional states. One of the first is attraction and withdrawal. They respond in order to get closer to people and situations or to move away. Social smiling is very engaging and begins at about 2 months of age. The infant returns a smile and a connection seems to have been made. (Infants can imitate facial expressions much earlier, but social smiling is a reaction to someone else.) Babies laugh at 3 to 5 months of age and demonstrate fear, anger, and sadness a few months later.

An interesting study in which a baby’s reactions are noted when a mother pays attention to a doll and ignores the baby suggests that babies can feel jealousy as early as 6 months of age. Once infants become more cognizant of those around, stranger wariness and separation anxiety can emerge. Stranger wariness is the discomfort a baby feels when being held or surrounded by strangers. This new look is sometimes hard for them to assimilate. Separation anxiety can be expressed through cries and protests when a caregiver leaves. Not all babies experience these emotions to the same degree. But they are usually interpreted as a sign that an attachment has been formed between the baby and certain caregivers. These usually subside after a few weeks for months.

Self-awareness or self-recognition is seen at around 15 months of age. This is the understanding that the image in the mirror is you. The classic test of self-awareness involves putting a dot of rouge on a baby’s nose and seeing how they react when looking in the mirror. A baby who tries to grab the nose in the mirror does not recognize the image as self. But the baby who starts to rub the dot off of their own nose has self-awareness or recognition. (Many animals do not achieve self-awareness. I have a dog that gets very upset with his image in the mirror and starts to bark. I once had a parakeet that was in love with his own image in the mirror!)

A sense of self leads to the development of social emotions such as guilt or shame and embarrassment. These emotions require the ability to see how others might view one’s own actions.

An attachment is the desire to be close to someone else. Early attachments between infants and caregivers have been the subject of a good deal of research. The assumption has been that our early relationships set the stage for subsequent relationships. These relationships can influence later relationships, but they do not dictate the future.

The most common type of attachment is a **secure attachment**. This is thought to be developed if the child receives care and affection early in life. This leads to a sense of trust and curiosity in early childhood. The child feels confident and explores the world feeling safe and secure. Again, the presence of separation anxiety may signal that an attachment has formed.

One type of insecure attachment style is **insecure-resistant**. This style may result from inconsistent care which sends the message that needs can often go unmet. The child is clingy and can never receive enough attention to feel okay. The child may fear being alone and worry that the caregiver will leave even when in their presence.

The **insecure-avoidant** style of attachment is one in which the child does not seek comfort or care from others. This child is neither curious nor clingy. Rather, such a child may seem to be precociously independent. The child is uncomfortable with closeness. This is the least common style of attachment and was described after viewing the interactions between mothers with schizophrenia and their children. The disorganized style of attachment doesn't seem to make sense in a given situation. The primary caregiver may have laughed when the child was upset or grown angry when the child was happy (or unhappy as the case may be). The child may cry or be combative with others during play. Or they may freeze or retreat in social situations. The behavior is unpredictable and emotions are inappropriate.

Attachment styles show cultural variation. This suggests that cultural expectations find their way in parenting practices and in attachment styles.

Children aren't born with personalities per se, but they do demonstrate differences in temperament soon after birth. Temperament refers to inborn behavioral tendencies. These are fairly consistent ways of relating to other people and situations. These aren't shaped by parenting or caregiving. But they may be tendencies that are interpreted by others and later give rise to personality traits we view in ourselves. For example, a baby who is very predictable may be labeled as a "good" baby and this may view may later be internalized into the self-concept.

The New York Longitudinal Study began in the 1950s and was an effort to monitor differences in children and keep track of these differences through the years. Qualities of temperament include: Activity. How active is the baby? Rhythmicity. Does the baby follow a routine of regularity? Do they want to eat and sleep at the same times each day? Approach/Withdrawal: How does the baby respond to others? Adaptability: Can the baby easily adjust when situations change? Intensity. How intensely does the child laugh or cry or react to situations? Mood. What is the child's mood? Is it consistent or does it fluctuate? Persistence and attention span. Does the baby tend to stay on task and focus? Distractibility. Is it easy to distract the child from an activity? Sensory threshold. Does the baby react strongly to changes in food texture, light, or sound?

The dimensions of temperament have been used to derive temperament types. The easy or flexible child is adaptable and shows a consistent, pleasant mood. The difficult, active, or feisty child reacts intensely to changes in routine or has wide variation in mood. The slow to warm up or cautious child withdraws from others and may dislike disruptions in routine. Many children are difficult to categorize. But knowing a child's temperament may be useful in dealing effectively with that child. Parenting styles that match temperament work well and are known as a goodness of fit.

Erikson's first psychosocial stage of development is trust versus mistrust. The dependent infant has to rely upon others for survival and stimulation. If the baby is given consistent, loving care, a sense of trust develops. If not, the child may feel insecure and worry that needs will go unmet. What kinds of situations might undermine the establishment of a sense of trust? Parents who are unaffectionate or resentful about the baby or who are preoccupied with discord in the relationship, who are unavailable or tense may convey this in their interaction with the child. An early stressful environment can have an impact on neurological development making the child more sensitive to stress in the future.

Establishing trust requires adequate care, sufficient oral stimulation through sucking, physical contact, and an overall message of care.

In the second year of life, children are becoming able to walk and talk and explore. Erikson suggests that their primary concern is that of independence, autonomy, or self-rule. They need to be allowed to be independent within safe limits. Performing a task and seeing the end result can give a child a sense of pride in their accomplishments. This self-evaluation is more effective than having others say "I'm so proud of you." In our next lesson, we'll focus on early childhood.

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CHAPTER OVERVIEW

5: Early Childhood

5.1: Early Childhood - What Will You Learn?

5.2: Physical Development During Early Childhood

5.3: Cognitive Development in Early Childhood

5.4: Psychosocial Development In Early Childhood - Self-Concept and Gender

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5.6: Parenting Style and Its Correlates

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5.1: Early Childhood - What Will You Learn?

After reading "Early Childhood" you should be able to:

1. Summarize overall physical growth during early childhood.
 2. Describe growth of structures in the brain during early childhood.
 3. Identify examples of gross and fine motor skill development in early childhood.
 4. Identify nutritional concerns for children in early childhood.
 5. Define preoperational intelligence.
 6. Illustrate animism, egocentrism, and centration using children's games or media.
 7. Describe language development in early childhood.
 8. Illustrate scaffolding.
 9. Explain private speech.
 10. Explain theory of mind.
 11. Explain Erikson's stages of psychosocial development for toddlers and children in early childhood.
 12. Contrast models of parenting/caregiver styles.
 13. Examine concerns about child care.
 14. Explain theories of self from Cooley and Mead.
 15. Explore gender role development.
 16. Examine concerns about childhood stress and development.
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5.2: Physical Development During 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 legs. But by the time the child reaches age 6, the torso has lengthened and body proportions have become more like those of adults.

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/caregivers and lead to the development of poor eating habits.

Nutritional Concerns

Caregivers who have established a feeding routine with their child can find this reduction in appetite a bit frustrating and become concerned. 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 and if given too much milk. Calcium interferes with the absorption of iron in the diet as well.

Caregivers also 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. 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:

Tips for Establishing Healthy Eating Patterns

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 (not overly hungry though) 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 together and including the children in kitchen chores can provide a fun and memorable experience.
7. Don't bribe. Bribing a child to eat vegetable by promising desert 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? These are also things to consider, of course.

Brain Maturation

Brain weight: If you recall, the brain is about 75 percent its adult weight by two years of age. By age 6, it is at 95 percent its adult weight. Myelination and the development of dendrites continues to occur in the cortex and as it does, we see a corresponding change in what the child is capable of doing. Greater development in the prefrontal cortex, the area of the brain behind the forehead that helps us to think, strategize, and control emotion, makes it increasingly possible to control emotional outbursts and to understand how to play games. Consider 4 or 5 year old children and how they might approach a game of soccer. Chances are, every move would be a response to the commands of a coach standing nearby calling out, “Run this way! Now, stop. Look at the ball. Kick the ball!” And, when the child is not being told what to do, they are likely to be looking at the clover on the ground or a dog on the other side of the fence! Understanding the game, thinking ahead, and coordinating movement improves with practice and myelination. Not being too upset over a loss, hopefully, does as well.

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.

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 have created to see this fascinating trend. Here are some examples of pictures drawn by kids from ages 2 to 7 years.



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 which connects the two hemispheres of the brain undergoes a growth spurt between ages 3 and 6 as well and results in improved coordination between right and left hemisphere tasks. (

Motor Skill Development

Early childhood is a time when most children are especially attracted to motion and song. Every place becomes a potential playground. Even the booth at a restaurant may afford 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 continue to improve their gross motor skills as they run and jump, as their bodies permit. And, 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. Fine motor skills are also being refined in activities such as pouring water into a container, drawing, coloring, and using safe 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 shoes will take a lot of practice and maturation. Motor skills continue to develop in middle childhood-but for preschoolers, play that deliberately involves these skills is emphasized.

Go ahead. Sing along and practice your fine motor skills.

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5.3: Cognitive Development in Early Childhood

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 some 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 do! 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.

Piaget's Preoperational Intelligence

As a refresher: The Swiss psychologist Jean Piaget proposed that children’s thinking progresses through a series of four discrete stages. By “stages,” he meant periods during which children reasoned similarly about many superficially different problems, with the stages occurring in a fixed order and the thinking within different stages differing in fundamental ways. As you may recall, the four stages that Piaget hypothesized were the sensorimotor stage (birth to 2 years), the preoperational reasoning stage (2 to 6 or 7 years), the concrete operational reasoning stage (6 or 7 to 11 or 12 years), and the formal operational reasoning stage (11 or 12 years and throughout the rest of life).

Schema, Assimilation, and Accommodation

Piaget said that children develop schemes or schema to help them understand the world (scheme, schema, schemata - these are all referring to the same thing). **Schema** means concepts (mental models) that are used to help us categorize and interpret information. By the time children have reached adulthood, they have created schemata for almost everything. When children learn new information, they adjust their schemata through two processes: assimilation and accommodation. First, they assimilate new information or experiences in terms of their current schemata: **assimilation** is when they take in information that is comparable to what they already know and the schema is not altered. **Accommodation** describes when they change their schema based on new information. This process continues as children interact with their environment.

For example, 2-year-old Blake learned the schema for dogs because his family has a Labrador retriever. When Blake sees other dogs in his picture books, he says, “Look mommy, dog!” Thus, he has assimilated them into his schema for dogs. One day, Blake sees a sheep for the first time and says, “Look mommy, dog!” Having a basic schema that a dog is an animal with four legs and fur, Blake thinks all furry, four-legged creatures are dogs. When Blake’s mom tells him that the animal he sees is a sheep, not a dog, Blake must accommodate his schema for dogs to include more information based on his new experiences. Blake’s schema for dog was too broad, since not all furry, four-legged creatures are dogs. He now modifies his schema for dogs and forms a new one for sheep.

Sensorimotor, Preoperational, Concrete Operational, and Formal Operational

Like Freud and Erikson, Piaget thought development unfolds in a series of stages approximately associated with age ranges. He proposed a theory of cognitive development that unfolds in four stages: sensorimotor, preoperational, concrete operational, and formal operational.

The first stage is the **sensorimotor** stage, which lasts from birth to about 2 years old (infancy). During this stage, children learn about the world through their senses and motor behavior. Young children put objects in their mouths to see if the items are edible, and once they can grasp objects, they may shake or bang them to see if they make sounds. Between 5 and 8 months old, the child develops **object permanence**, which is the understanding that even if something is out of sight, it still exists (Bogartz, Shinsky, & Schilling, 2000). According to Piaget, young infants do not remember an object after it has been removed from sight. Piaget studied infants’ reactions when a toy was first shown to an infant and then hidden under a blanket. Infants who had already developed object permanence would reach for the hidden toy, indicating that they knew it still existed, whereas infants who had not developed object permanence would appear confused.

Please take a few minutes to view this [brief video](#) demonstrating different children’s ability to understand object permanence.

In Piaget's view, around the same time children develop object permanence, they also begin to exhibit stranger anxiety, which is a fear of unfamiliar people. Babies may demonstrate this by crying and turning away from a stranger, by clinging to a caregiver, or by attempting to reach their arms toward familiar faces such as parents. Stranger anxiety results when a child is unable to assimilate the stranger into an existing schema; therefore, she can't predict what her experience with that stranger will be like, which results in a fear response.

Piaget's second stage is the **preoperational stage**, which is from approximately 2 to 7 years old (early childhood). In this stage, children can use symbols to represent words, images, and ideas, which is why children in this stage engage in pretend play. A child's arms might become airplane wings as he zooms around the room, or a child with a stick might become a brave knight with a sword. Children also begin to use language in the preoperational stage, but they cannot understand adult logic or mentally manipulate information (the term *operational* refers to logical manipulation of information, so children at this stage are considered to be *pre-operational*). Children's logic is based on their own personal knowledge of the world so far, rather than on conventional knowledge. For example, dad gave a slice of pizza to 10-year-old Keiko and another slice to her 3-year-old brother, Kenny. Kenny's pizza slice was cut into five pieces, so Kenny told his sister that he got more pizza than she did. Children in this stage cannot perform mental operations because they have not developed an understanding of **conservation**, which is 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.

This [video](#) shows a 4.5-year-old boy in the preoperational stage as he responds to Piaget's conservation tasks.

During this stage, we also expect children to display **egocentrism**, which means that the child is not able to take the perspective of others. A child at this stage thinks that everyone sees, thinks, and feels just as they do. Imagine a pair of siblings, Keiko and Kenny, what happens when one of them needs to take the perspective of the other? Keiko's birthday is coming up, so their mom takes Kenny to the toy store to choose a present for his sister. He selects an Iron Man action figure for her, thinking that if he likes the toy, his sister will too. An egocentric child is not able to infer the perspective of other people and instead attributes his own perspective.

Piaget developed the Three-Mountain Task to determine the level of egocentrism displayed by children. Children view a 3-dimensional mountain scene from one viewpoint, and are asked what another person at a different viewpoint would see in the same scene. Watch the Three-Mountain Task in action in this [short video](#) from the University of Minnesota and the Science Museum of Minnesota.

Piaget's third stage is the **concrete operational stage**, which occurs from about 7 to 11 years old (middle childhood). In this stage, children can think logically about real (concrete) events; they have a firm grasp on the use of numbers and start to employ memory strategies. They can perform mathematical operations and understand transformations, such as addition is the opposite of subtraction, and multiplication is the opposite of division. In this stage, children also master the concept of conservation: Even if something changes shape, its mass, volume, and number stay the same. For example, if you pour water from a tall, thin glass to a short, fat glass, you still have the same amount of water.

Children in the concrete operational stage also understand the principle of **reversibility**, which means that objects can be changed and then returned back to their original form or condition. Take, for example, water that you poured into the short, fat glass: You can pour water from the fat glass back to the thin glass and still have the same amount (minus a couple of drops).

The fourth, and last, stage in Piaget's theory is the **formal operational stage**, which is from about age 11 to adulthood. Whereas children in the concrete operational stage are able to think logically only about concrete events, children in the formal operational stage can also deal with abstract ideas and hypothetical situations. Children in this stage can use abstract thinking to problem solve, look at alternative solutions, and test these solutions. In adolescence, a renewed egocentrism occurs. For example, a 15-year-old with a very small pimple on her face might think it is huge and incredibly visible, under the mistaken impression that others must share her perceptions.

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 in formal operations is in terms of how they handle emotionally charged issues.

It seems that once we reach adulthood our problem solving abilities change: As we attempt to solve problems, we tend to think more deeply about many areas of our lives, such as relationships, work, and politics (Labouvie-Vief & Diehl, 1999). Because of this, postformal thinkers are able to draw on past experiences to help them solve new problems. Problem-solving strategies using postformal thought vary, depending on the situation. What does this mean? Adults can recognize, for example, that what seems to be an ideal solution to a problem at work involving a disagreement with a colleague may not be the best solution to a disagreement with a significant other.

Characteristics of the Preoperational Stage

Piaget's stage that coincides with early childhood is the **preoperational stage**. The word operational means logical, so these children were thought to be "illogical" (compared to the typical thinking of most older children and adults). However, they were learning to use language or to think of the world symbolically, which is fascinating! Let's examine some Piaget assertions about children's cognitive abilities at this age.

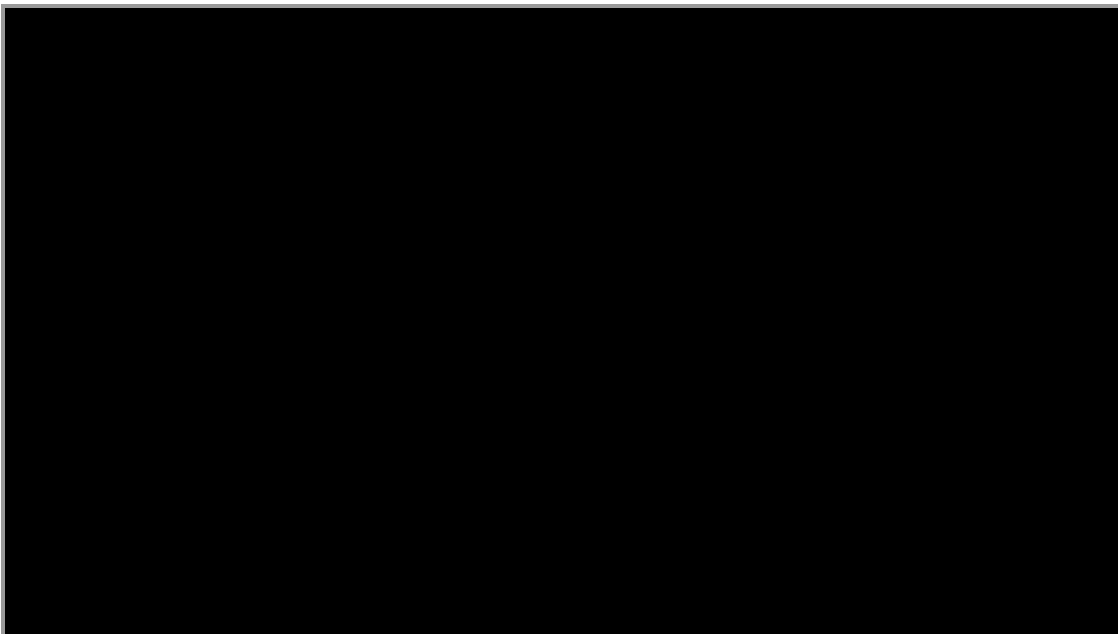
Pretend Play

Pretending is a favorite activity at this time. A toy has qualities beyond the way it was designed to function and can now be used to stand for a character or object unlike anything originally intended. A teddy bear, for example, can be a baby or the ruler of a faraway land! Pretend or make-believe shows the child's ability to invent and imagine.

Piaget believed that children's pretend play helped children solidify new schemes they were developing cognitively. This play, then, reflected changes in their conceptions or thoughts. However, children also learn as they pretend and experiment. Their play does not simply represent what they have learned (Berk, 2007).

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 3 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. This indicates some awareness of the views of others.

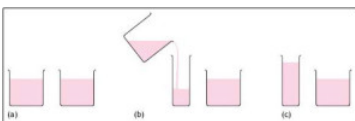


Syncretism

Syncretism refers to a tendency to think that if two events occur simultaneously, one caused the other. An example of this would be a child thinking that if she put on her bathing suit it would turn to season to summer.

Animism

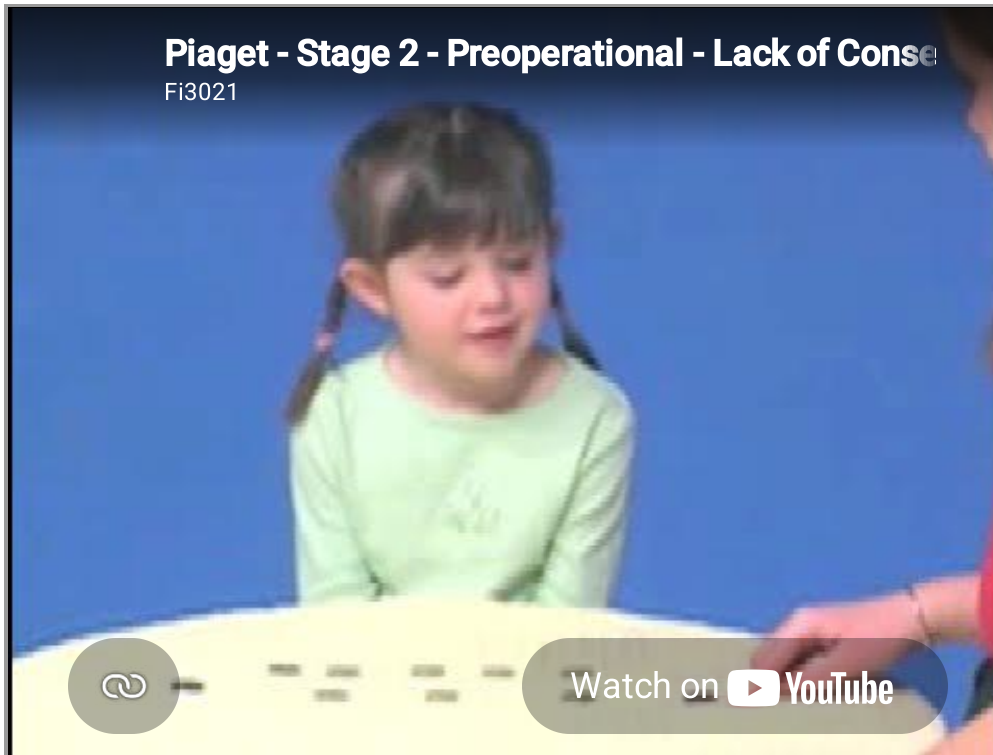
Animism refers to attributing life-like qualities to objects. The cup is alive, the chair that falls down and hits the child's ankle is mean, and the toys need to stay home because they are tired. Watch this segment in which the legendary late actor, Robin Williams, sings a song to teach children the difference between what is alive and what is not alive. (Please note: this video is meant to respectfully honor the incredible work he did in his life as he was certainly one of the most alive humans to grace our hearts with humor). Cartoons frequently show objects that appear alive and take on lifelike qualities. Young children do seem to think that objects that move may be alive but after age 3, they seldom refer to objects as being alive (Berk, 2007).



Conservation of Liquid. Does pouring liquid in a tall, narrow container make it have more?

Conservation Errors

Conservation refers to the ability to recognize that moving or rearranging matter does not change the matter - something that can look different and be unchanged in amount or in what it really is. Imagine a 2 year old and a 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!" Watch the following examples of conversation errors of quantity and volume:



Theory of Mind

Imagine showing a child of three 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 ask the child what they thought was in the box before it was opened, they may respond, "crayons". If you ask what their friend would have thought was in the box, the response would still be "crayons". Why? Before about 4 years of age, a child does not recognize that the mind can hold ideas that are not accurate. So this 3 year old changes their response once shown that the box contains crayons. **The theory of mind** is the understanding that the mind can be tricked or that the mind is not always accurate. At around age 4, the child would reply, "Crayons" and understand that thoughts and realities do not always match.

This awareness of the existence of mind is part of "social intelligence" or 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 empathetic toward others. This ability helps us to anticipate and predict the actions of others (even though these predictions are sometimes inaccurate).

Vygotsky

Lev Vygotsky (1896-1934) was a Russian psychologist who argued that culture has a major impact on a child's cognitive development. Piaget and Gesell believed development stemmed directly from the child, and although Vygotsky acknowledged intrinsic development, 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 the social interactions with adults and more learned peers can facilitate a child's potential for learning. Without this interpersonal instruction, he believed children's minds would not advance very far as their knowledge would be based only on their own discoveries. Let's review some of Vygotsky's key concepts.



Figure 4.11: Lev Vygotsky. Source.

Zone of Proximal Development and Scaffolding

Vygotsky's best known concept is the **Zone of Proximal Development (ZPD)**. Vygotsky stated that children should be taught in the ZPD, *which occurs when they can almost perform a task, but not quite on their own without assistance*. With the right kind of teaching, however, they can accomplish it successfully. A good teacher identifies a child's ZPD and helps the child stretch beyond it. Then the adult (teacher) gradually withdraws support until the child can then perform the task unaided. Researchers have applied the metaphor of scaffolds (the temporary platforms on which construction workers stand) to this way of teaching. **Scaffolding** is *the temporary support that parents or teachers give a child to do a task*.

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 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 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. This inner speech is not as elaborate as the speech we use when communicating with others (Vygotsky, 1962). [The APA \(American Psychological Association\) Dictionary](https://www.apa.org/dictionary/entry/private-speech) offers the following definition of Private Speech:

spontaneous self-directed talk in which a person "thinks aloud," particularly as a means of regulating cognitive processes and guiding behavior. In the theorizing of Lev Vygotsky, private speech is considered equivalent to **egocentric speech**.



Figure 4.12: Children talk to themselves to better problem solve. Source.

Contrast with Piaget

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. Vygotsky viewed social interaction as necessary for cognitive development. Who is correct? Both theories certainly contribute to our understanding of how children learn.

(Source - Lally & Valentine French; CC BY-NC-SA)

Language Development

Vocabulary Growth

A child's vocabulary expands between the ages of 2 to 6 from about 200 words to over 10,000 words 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 tend to learn nouns more readily. But those learning less verb-friendly languages, such as English (seen as a noun-friendly language), seem to need assistance in grammar to master the use of verbs (Imai, et als, 2008). Children are also very creative in creating their own words to use as labels such as a "take-care-of" when referring to John, the character on the cartoon, Garfield, who takes care of the cat.

Literal Meanings

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, in a classroom full of preschoolers the teacher says, "Wow! That was a piece of cake!" The children begin asking "Cake? Where is my cake? I want cake!"

Overregularization

Children learn rules of grammar as they learn language but may apply these rules inappropriately at first. For instance, a child learns to add "ed" to the end of a word to indicate past tense. Then form a sentence such as "I goed there. I doed that." This is typical at ages 2 and 3. They will soon learn new words such as went and did to be used in those situations.

The Impact of Training

Children can be assisted in learning language by others who listen attentively, model more accurate pronunciations and encourage elaboration. The child exclaims, "I'm goed there!" and the adult responds, "You went there? Where did you go?" Children may be ripe for language as Chomsky suggests, but active participation in helping them learn is important for language development as well. The process of assisting through guided support (called **scaffolding**) is one in which the guide provides needed assistance to the child as a new skill is learned.

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5.4: Psychosocial Development In Early Childhood - Self-Concept and Gender

Self-Concept



Figure 5.4.1: A child sees itself in a mirror. (CC BY; Unknown via Flickr)

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.

Interactionism and Views of Self

Cooley - The Looking-Glass Self

Charles Horton Cooley (1964) suggests 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, resilient or not, 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 it 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 feel self-conscious. The process of the looking-glass self is pronounced when we are preschoolers, or perhaps when we are in a new school or job or are taking on a new role in our personal lives and are trying to gauge our own performances. When we feel more sure of who we are we focus less on how we appear to others.

Mead - The "I" and the "Me"

Herbert Mead (1967) offers 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, consistent with Freud's id. 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 their caregiver, "No! Don't do that, that's bad" while the adult points and wags their finger. Later, the child may mimic the same behavior toward the self and say aloud, "No, that's bad" while pointing and wagging their own finger. What has happened? The child is able to see themselves through the eyes of the caregiver. As the child grows and is exposed to many situations and rules of culture, that child begins to view the self in the eyes of many others through 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, a friend, and so on.

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. This exaggeration tends to be replaced by a more realistic sense of self in middle childhood.

Self-Esteem

Early childhood is a time of forming an initial sense of self. **Self-concept** is our self-description according to various categories, such as our external and internal qualities. In contrast, **self-esteem** is an evaluative judgment about who we are. The emergence of cognitive skills in this age group 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).



Figure 5.4.2: Young children don't always feel good about themselves.

(Unsplash license; Michael Mims via Unsplash)

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 a 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.

Gender

Gender Vs Sex

Gender identity is a complex topic that we could cover over an entire course if we had the time. And it is a concept that is in transition as traditionally accepted definitions are being replaced by an understanding that is more reflective of the diversity of the human experience. Consequently, many texts will include references that are clearly outdated and the body of relevant research is only starting to accumulate. Freud's view of gender, for example, reflects the time in which he lived.

Most Western societies operate on the idea that gender is a binary—that there are essentially two genders (men and women) based on two sexes (male and female), and that everyone must fit one or the other. At birth, in the United States, for example, babies are generally assigned "male or female" based on physical characteristics. This refers to the "**sex**" of the child. When children are able to express themselves, they will generally declare themselves to be a boy or a girl (or somewhere in between or none at all); this is their "**gender identity**." In other words, "sex" is assigned at birth based on biological characteristics, and "gender", a social construct, emerges later.

Are there more than two genders?

Many children's gender identity aligns with their biological sex (called "**cisgender**"). Preschool-aged children become increasingly interested in finding out the differences and similarities between genders both physically and in terms of what activities are deemed by those around them as "acceptable". While 2-year-olds can identify some differences in gender, preschoolers become more interested in what it means to be a certain gender and will typically self-identify by declaring their gender (or sometimes non-gender). This self-identification or gender identity is followed sometime later with "gender constancy" or the sense that gender does not change (for some). Gender roles or the "rights and expectations that are associated with gender in a society" are learned throughout childhood and into adulthood in a multitude of ways. Think, for just a moment, about some of the messages YOU were given by caregivers, commercial ads, schools, and society about gender. What were some of the messages you were given or even observed? They may even seem subtle to you at first, but upon reflection, you may realize that the messages we receive about

gender are vast and far-reaching. Are the messages "good?" Are they "bad?" As so much that we study in this course indicates: ***It depends!***

Let's explore a bit further. There are an overwhelming amount of examples of another or "third gender" in cultures in the past. Here is an excerpt of an article offered through Penn State University:

The article states: In nearly all of human history and, in particular, human culture, we have recognized and integrated at least two genders. For most societies, this means labeling two sexes (male/female) and two genders (man/woman)... however cases of a "third gender" are well documented in multiple societies, as well.

1. In indigenous Hawaii, before its colonization, there was a long-standing multiple gender tradition, where the *mahu* could be a male or female biologically, but decide to inhabit a gender role either opposite theirs, somewhere in between the traditional sex roles, or even both masculine and feminine roles. Instead of being written off as outcasts, as persons of atypical gender identities often are today, these *mahu* were revered in their social roles as sacred educators of ancient traditions.
2. In ancient Incan culture, the Incas worshipped a "dual gendered god" known as *chuqui chinchay*, who could only be attended and honored by third gender shamans or servants who wore androgynous clothing as "a visible sign of a third space that negotiated between the masculine and the feminine, the present and the past, the living and the dead."
3. Among the *Sakalavas* of Madagascar, there is a third gender group reserved especially for little boys thought to have a feminine appearance and personality. These boys, rather than labeled as "gay men" after maturing and experiencing the upbringing of a male, are instead raised by their parents as girls from a young age (Source: Bader, 2014; [Third Genders: New Concept? Or Old?](#)).

In other societies, membership in any of the gender categories is open to people regardless of their sex. In some cultures and subcultures, gender has traditionally been viewed as fluid, or existing along a spectrum. A continuum is multidimensional, allowing third gender, gender fluidity or genderless options, as well as many other possibilities and combinations; it is thus a reflection of the diversity of human genders.

Sigmund Freud's Psychosexual Theory

While we can dismiss much of what Freud theorized regarding many aspects of development (if not most), a consideration of his dated views is still appropriate. One thing that is not commonly mentioned about Freud is that he was one of the first theorists to really focus in on the fact that the two sexes may actually develop differently, meaning he was one of the first to focus on gender differences. However, he did assume that the male experience was the "norm" of development, which is evident in his theory and concepts. However, to his credit, he recognized that biology did not necessarily equal gender. As you have probably learned in many other courses, his theory comes under heavy criticism and is riddled with biases. However, there are some concepts that seem to have endured, including the concept of internal conflicts and how the unconscious motivates us, to some degree.

Despite a few enduring concepts, there are other pieces of his theory that are, as I mentioned, heavily criticized. For example, his theory assumes that healthy and mature development results in heterosexuality with very strict conformity to one's prescribed gender. In fact, his theory would suggest that someone that is not heterosexual experienced a fixation in one of his stages (described below) and thus did not resolve a primary conflict. As such, one would need to attempt to be "cured" of homosexuality. He also suggested that, although biology does not predict gender development, gender development is always related to sexuality.

Freud's theory is well known for introducing the concepts of the id, ego, and superego and for centering much of his theory around the libido (or sex drive). The *id* can be thought of as our primal instincts – sex and aggression, the *ego* can be thought of as our logical thinking brain area – rational, practical thinking, and the *superego* can be thought of as our moral compass – the mediator between the id and ego. Ultimately, Freud indicated that the libido (sex drive, part of the *id*) was the driving factor that moved individuals through development, and the location of this libido moved throughout development. In the beginning, the libido is centered in the oral area, known as the Oral Stage. An individual gets pleasure from feeding, swallowing, sucking, etc. If a child develops appropriately in this stage, they learn that they are loved by their mother, and their ego begins to develop, to deal with frustration from going from being breastfed to eating solid foods. If they do not resolve this stage appropriately, they may later have issues with over eating, smoking, etc. In each stage, there is a goal to resolve a conflict successfully. If the individual resolves the conflict, the child develops adaptively. According to Freud, if the individual does not resolve the conflict successfully, there are negative consequences to development. In early childhood we turn our focus to the Phallic stage, as this is the area in which the Oedipus complex emerges and most directly relates to gender development from Freud's theory.

Oedipus Complex

Ultimately, until the Phallic stage, Freud viewed development to be the same for both boys and girls. The penis, or absence of, is the differentiating factor here, as the libido moves to the penis or clitoris in the Phallic stage. He viewed this stage as the time in which ‘boys become men’.

So why did Freud describe the conflict in the Phallic stage as the Oedipus complex? Well, let’s take a very brief look at Oedipus himself. Oedipus was a man that killed his father and married his mother in Greek mythology. As this isn’t a lesson in Greek mythology, we will keep the story extremely brief. Oedipus had an early life that separated him from his true mother and father. He later ended up killing his father in battle (not knowing it was his father). Events occurred and ultimately, he married. However, he nor his wife knew that his new bride was actually his mother. When this was learned, his mother/wife hung herself and Oedipus poked both of his eyes out, blinding him (McLeod, 2008).

So, what does this have to do with Freud’s stages and theory? Great question! In the Phallic stage, the penis (or absence thereof) is the focus of the libido, and thus, will be the focus of the conflict that must be resolved in that stage. Ultimately, in this stage, boys begin to develop sexual desires for their mother and become jealous of their father. This desire then leads to a strong fear that his father will ultimately castrate him due to his attraction, which is known as *castration anxiety*. As always, there is a conflict in Freud’s stage, and here it is. To help manage this conflict, the superego develops and the boy transfers his desire for his mother onto other women, in general. Thus, the stage is resolved (McLeod, 2008; Sammons, n.d.).

Electra Complex

So how does this work for girls if they do not have a penis to fear castration of? Sometimes referred to as the Electra Complex, Freud theorized that girls were upset and distressed that they had no penis (referred to as penis envy) and resented their mother for this. He theorized that girls begin desiring their father at this time and become jealous of their mother. Similar to boys, the development of the superego allows the girl to resolve this conflict. Ultimately, she begins to accept that she cannot gain a penis, nor have her father, and she transfers this desire onto other men and later transfers her desire for a penis to a desire for a baby (and maybe even more so, a baby boy; Sammons, n.d.).

Overall, for both genders, *identification* is the ultimate resolution of the internal conflict in the Phallic stage. This results in the individual identifying with the same-sex parent, and adopting that parent’s behaviors, roles, etc. (McLeod, 2008).

Following the Phallic stage is the Latency stage, in which Freud indicated that no real psychosexual development is occurring, rather impulses are repressed. However, in the Genital stage, Freud theorized that this is a time in which adolescents experiment sexually, and begin to settle into romantic relationships. Freud theorized that healthy development leads to sexual drive being released through heterosexual intercourse; however, fixations or incomplete resolutions of conflict in this stage may lead to sexual atypicalities (e.g., preference for oral sex rather than intercourse, homosexual relations, etc.; McLeod, 2008). Again, you can see, very clearly, that there is an underlying assumption that healthy development equals heterosexuality, which is a major criticism of Freud’s theory (Sammons, n.d.).

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Transgender Identities

In Western cultures, those who identify with the gender that was assigned to them at birth based on their biological sex (for example, they are assigned male at birth and continue to identify as a boy) are called **cisgender**. Individuals who identify with a gender that is different from the one they were assigned based on their biological sex (as just one example, they are assigned male at birth but feel inwardly that they are female, or a gender other than a boy) are **transgender**. Transgender is an umbrella term that refers to the state of one’s gender identity not matching one’s assigned sex (their identification by **others** as male, female, or intersex, based on genetic and biological characteristics). Transgender is independent of sexual orientation; transgender people may identify as heterosexual, lesbian, gay, bisexual, queer, pansexual, or asexual (to name a few examples), just like cisgender people do. In January of 2017 the Williams Institute released a report titled “Age of Individuals Who Identify as Transgender in the United States” that uses national data to determine the proportion of the population in the United States that identifies as transgender at age 13 and beyond and to develop a greater understanding of this population. It was found that .7% of those 13-24 identified as transgender. This estimate may be conservative as many transgender individuals are afraid to disclose their authentic identity.

Preschool-aged children become increasingly interested in finding out the differences in gender and cultural "norms" of gender performance both physically and in terms of what activities are currently acceptable within their culture. While 2 year olds can identify some differences and similarities, preschoolers become more interested in what it means to take on a gender identity. Gender roles or the rights and expectations that are associated with being a particular gender (or not) are learned throughout childhood and into adulthood. Gender socialization (in many cultures and certainly in the United States) is a process that continues throughout life but children, teens, and adults can refine and modify their sense of self based on many more factors than just gender.

Learning theorists suggest that gender role socialization is a result of the ways in which parents/caregivers, teachers, friends, schools, religious/spiritual institutions, media, and others send messages about what is acceptable or desirable behavior based on gender. This socialization begins early-in fact, it may even begin the moment a parent/caregiver 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/caregiver. And this stereotyping continues to guide perception through life. Consider parents/caregivers 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 exact same infant in pink (a color used in the United States for baby girls), they describe the baby as pretty, delicate, and frustrated when crying (Maccoby & Jacklin, 1987). Female-labeled infants are held more, talked to more frequently, and given direct eye contact, while a male-labeled infant's play is often mediated through a toy or activity.

Let's take a look at some cultural binary examples: 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 is 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 kids are encouraged to make.

Peers also play a role with respect to gender, signaling expectations and value judgments, just as caregivers do. Friends discuss what is acceptable for boys and girls and popularity may be based on modeling or acting in ways that are considered "ideal behavior" or "looks" for the different sexes. This is called "**gender performance**." Girls tend to be socialized to tell one another secrets to validate others as best friends while boys are often encouraged to 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. For example, while the tides seem to be changing around marketing toys to "girls" or "boys" in certain ways, research by the Institution for Engineering and Technology (IET) found that toys with a science, technology, engineering and math focus were three times as likely to be targeted at boys than girls. And despite high-profile recent [campaigns](#) that have had some success, toys for girls are still overwhelmingly pink. While the gendering of toys is certainly problematic, it's not just the toys which are the issue, but the whole idea that some things are just for "boys or girls". If children learn that early, it's hardly surprising that they go on to apply this logic to their career choices, too.

How much does gender matter? In the United States, gender differences are found in school experiences, 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, emotional, and nurturing are portrayed in children's toys, books, commercials, video games, movies, television shows and music. In adulthood, these differences are reflected in higher rates of violent death for men in young adulthood and income gaps between men and women where women working full-time earn about 74 percent the income of men.

But does this mean that each of us receives and interprets these messages in the same way? It certainly depends on many variables and in Lifespan Psychology, the answer is often, "it depends." In addition to being recipients of these cultural expectations, we are, after all, individuals who also modify these roles (Kimmel, 2008).



Figure 5.4.3: Children of various ages and genders can play together. (Unsplash license; [MI PHAM](#) via [Unsplash](#))

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5.5: Psychosocial Development in Early Childhood

Erikson: Initiative vs. Guilt

The trust and autonomy of previous stages develop into a desire to take initiative or to think of ideas and initiative action. Children may want to build a fort with the cushions from the living room couch or open a lemonade stand in the driveway or make a zoo with their stuffed animals and issue tickets to those who want to come. Or they may just want 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 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 that emerges from the bathroom with clean teeth and pajamas!

Parenting/Caregiver Styles (Baumrind)

What can parents and caregivers do to nurture a healthy self-concept in children? Diana Baumrind (1971, 1991, 2013) thinks parenting style is a factor. The way we parent is an important factor in a child's socioemotional growth. Baumrind developed and refined a theory describing four parenting styles: **authoritative**, **authoritarian**, **permissive**, and **uninvolved/neglectful**.

Relationships between parents/primary caregivers and children continue to play a significant role in children's development during early childhood. Keep in mind that most parents/caregivers do not follow any model completely. Real people tend to fall somewhere in between these styles. And sometimes the styles change from one child to the next or in times when the parent/caregiver has more or less time and energy. Styles can also be affected by concerns the parent/caregiver has in other areas of their life. For example, parenting/caregiver styles tend to become more authoritarian when they are tired and perhaps more authoritative when they are more energetic. Sometimes people seem to change their parenting/caregiver approach when others are around, maybe because they become more self-conscious as parents/caregivers or are concerned with giving others the impression that they are too "tough" or too "easy-going" in their styles with children. And of course, parenting/caregiver styles may reflect the type of style someone saw modeled while growing up.



Figure 5.5.1: The authoritative parent allows for independence, but also provides structure. (Unsplash license; [lauren lulu taylor](#) via Unsplash)

Authoritative

With the **authoritative** style, the parent/caregiver gives reasonable demands and consistent limits, expresses warmth and affection, and listens to the child's point of view. Authoritative parents are communicative - they set rules and explain the reasons behind them. They are also flexible and willing to make exceptions to the rules in certain cases—for example, temporarily relaxing bedtime rules to allow for a nighttime swim during a family vacation. Of the four parenting styles, the authoritative style is the one that is most encouraged in modern United States society. American children raised by authoritative parents tend to have high self-esteem and social skills. However, effective parenting styles vary as a function of culture and, as Small (1999) points out, the authoritative style is not necessarily preferred or appropriate in all cultures.

Authoritarian

In **authoritarian** style (*note: this is different from authoritative, although it sounds similar at first glance*), the parent/caregiver places high value on conformity and obedience (think of the phrase, "My way or the highway"). The parents/caregivers are often strict, tightly monitor their children, and express little warmth. In contrast to the authoritative style, authoritarian parents/caregivers probably would not relax bedtime rules during a vacation because they consider the rules to be set, and they expect obedience. This style can create anxious, withdrawn, and unhappy kids.

Permissive

For parents/caregivers who employ the **permissive** style of parenting, the kids run the show and anything goes. Permissive parents make few demands and rarely use punishment. They tend to be very nurturing and loving, and may play the role of friend rather than parent/caregiver. In terms of our example of vacation bedtimes, permissive parents might not have bedtime rules at all—instead they allow the child to choose their bedtime whether on vacation or not. Not surprisingly, children raised by permissive parents/caregivers tend to lack self-discipline, and the permissive parenting style is negatively associated with academic learning and performance (Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987). The permissive style may also contribute to other risky behaviors such as alcohol abuse (Bahr & Hoffman, 2010), risky sexual behavior (Donenberg, Wilson, Emerson, & Bryant, 2002), and increased display of disruptive behaviors (Parent et al., 2011). However, there are some positive outcomes associated with children raised by permissive parents. They tend to have higher self-esteem, better social skills, and report lower levels of depression (Darling, 1999).

Uninvolved/Neglectful

With the **uninvolved** style of parenting, the parents/caregivers are indifferent, uninvolved, and sometimes referred to as neglectful. They don't respond to the child's needs and make relatively few demands. This could be because of severe depression or substance abuse, or other factors such as extreme focus on work. These parents/caregivers may provide for the child's basic needs, but little else. The children raised in this style are usually emotionally withdrawn, fearful, anxious, perform poorly academically, and are at an increased risk of substance abuse (Darling, 1999).

Lemasters and Defrain Model of Parenting

Lemasters and Defrain (1989) offer another model of parenting. This model is interesting because it looks more closely at the motivations of the caregiver 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 themselves. All of the good deeds performed for the child, in the name of being a “good parent”, may be used later should the parent/caregiver want to gain compliance from the child. If a child goes against the parent's wishes, they can remind the child of all of the times they helped the child and evoke a feeling of guilt so that the child will do what they want. The child learns to be dependent and manipulative as a result. (Beware! A parent/caregiver busy whipping up cookies may really be thinking “control”!)

The Pal

The **pal** is like the permissive parent/caregiver described in Baumrind's model above. The pal wants to be the child's friend. Perhaps they are lonely or perhaps they are 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 and set few limitations. Consequently, the child may have little self-discipline and may try to test limits with others.

The Police Officer/Drill Sergeant

The **police officer/drill sergeant** style of is similar to the authoritarian parent described above. The parent/caregiver focuses primarily on making sure that the child is obedient and that the parent/caregiver has full control of the child. Sometimes this can be taken to the extreme by giving the child tasks that are really designed to check on their level of obedience. For example, the parent/caregiver 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/caregiver 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/caregiver that is displaced on others.

The Teacher-Counselor

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, they can rear a perfect child. “What's wrong with that?” you might ask. There are two major problems with this approach. First, the parent/caregiver is taking all of the responsibility for the child's behavior—at least indirectly. If the child has difficulty, the parent/caregiver feels responsible and thinks that the solution lies in reading more advice and trying more diligently to follow that advice. Parents and caregivers can certainly influence children, but thinking that they are fully responsible

for the child's outcome if faulty. They 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/caregiver decides to help the child build self-esteem and has read that telling the child how special they are or how important it is to compliment the child on a job well done, the parent/caregiver may convey the message that everything the child does is exceptional or extraordinary. A child may come to expect that all of their 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.

The Athlete-Coach

So what is left? Lemasters and Defrain (1989) suggest that the **athletic coach style of parenting/caregiving** 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 style can help 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/caregiver does not intervene or do things *for* the child. Rather, their role is to provide guidance while the child learns, first hand, how to handle these situations. And 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/caregiver 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!"

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5.6: Parenting Style and Its Correlates

Parenting is a complex activity that includes many specific behaviors that work individually and together to influence child outcomes. Although specific parenting behaviors, such as spanking or reading aloud, may influence child development, looking at any specific behavior in isolation may be misleading. Many writers have noted that specific parenting practices are less important in predicting child well-being than is the broad pattern of parenting. Most researchers who attempt to describe this broad parental milieu rely on Diana Baumrind's concept of parenting style. The construct of parenting style is used to capture normal variations in parents' attempts to control and socialize their children (Baumrind, 1991). Two points are critical in understanding this definition. First, parenting style is meant to describe normal variations in parenting. In other words, the parenting style typology Baumrind developed should not be understood to include deviant parenting, such as might be observed in abusive or neglectful homes. Second, Baumrind assumes that normal parenting revolves around issues of control. Although parents may differ in how they try to control or socialize their children and the extent to which they do so, it is assumed that the primary role of all parents is to influence, teach, and control their children.

Parenting style captures two important elements of parenting: parental responsiveness and parental demandingness (Maccoby & Martin, 1983). Parental responsiveness (also referred to as parental warmth or supportiveness) refers to "the extent to which parents intentionally foster individuality, self-regulation, and self-assertion by being attuned, supportive, and acquiescent to children's special needs and demands" (Baumrind, 1991, p. 62). Parental demandingness (also referred to as behavioral control) refers to "the claims parents make on children to become integrated into the family whole, by their maturity demands, supervision, disciplinary efforts and willingness to confront the child who disobeys" (Baumrind, 1991, pp. 61-62).



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Four Parenting Styles

Categorizing parents according to whether they are high or low on parental demandingness and responsiveness creates a typology of four parenting styles: indulgent, authoritarian, authoritative, and uninvolved (Maccoby & Martin, 1983). Each of these parenting styles reflects different naturally occurring patterns of parental values, practices, and behaviors (Baumrind, 1991) and a distinct balance of responsiveness and demandingness.

- Indulgent parents (also referred to as "permissive" or "nondirective") "are more responsive than they are demanding. They are nontraditional and lenient, do not require mature behavior, allow considerable self-regulation, and avoid confrontation" (Baumrind, 1991, p. 62). Indulgent parents may be further divided into two types: democratic parents, who, though lenient, are more conscientious, engaged, and committed to the child, and nondirective parents.
- Authoritarian parents are highly demanding and directive, but not responsive. "They are obedience- and status-oriented, and expect their orders to be obeyed without explanation" (Baumrind, 1991, p. 62). These parents provide well-ordered and structured environments with clearly stated rules. Authoritarian parents can be divided into two types: nonauthoritarian-directive, who are directive, but not intrusive or autocratic in their use of power, and authoritarian-directive, who are highly intrusive.

- Authoritative parents are both demanding and responsive. "They monitor and impart clear standards for their children's conduct. They are assertive, but not intrusive and restrictive. Their disciplinary methods are supportive, rather than punitive. They want their children to be assertive as well as socially responsible, and self-regulated as well as cooperative" (Baumrind, 1991, p. 62).
- Uninvolved parents are low in both responsiveness and demandingness. In extreme cases, this parenting style might encompass both rejecting-neglecting and neglectful parents, although most parents of this type fall within the normal range. Because parenting style is a typology, rather than a linear combination of responsiveness and demandingness, each parenting style is more than and different from the sum of its parts (Baumrind, 1991).

In addition to differing on responsiveness and demandingness, the parenting styles also differ in the extent to which they are characterized by a third dimension: psychological control. Psychological control "refers to control attempts that intrude into the psychological and emotional development of the child" (Barber, 1996, p. 3296) through use of parenting practices such as guilt induction, withdrawal of love, or shaming. One key difference between authoritarian and authoritative parenting is in the dimension of psychological control. Both authoritarian and authoritative parents place high demands on their children and expect their children to behave appropriately and obey parental rules. Authoritarian parents, however, also expect their children to accept their judgments, values, and goals without questioning. In contrast, authoritative parents are more open to give and take with their children and make greater use of explanations. Thus, although authoritative and authoritarian parents are equally high in behavioral control, authoritative parents tend to be low in psychological control, while authoritarian parents tend to be high.

Consequences for Children

Parenting style has been found to predict child well-being in the domains of social competence, academic performance, psychosocial development, and problem behavior. Research-based on parent interviews, child reports, and parent observations consistently finds:

- Children and adolescents whose parents are authoritative rate themselves and are rated by objective measures as more socially and instrumentally competent than those whose parents are nonauthoritative (Baumrind, 1991; Weiss & Schwarz, 1996; Miller et al., 1993).
- Children and adolescents whose parents are uninvolved perform most poorly in all domains.

In general, parental responsiveness predicts social competence and psychosocial functioning, while parental demandingness is associated with instrumental competence and behavioral control (i.e., academic performance and deviance). These findings indicate:

- Children and adolescents from authoritarian families (high in demandingness, but low in responsiveness) tend to perform moderately well in school and be uninvolved in problem behavior, but they have poorer social skills, lower self-esteem, and higher levels of depression.
- Children and adolescents from indulgent homes (high in responsiveness, low in demandingness) are more likely to be involved in problem behavior and perform less well in school, but they have higher self-esteem, better social skills, and lower levels of depression.

In reviewing the literature on parenting style, one is struck by the consistency with which authoritative upbringing is associated with both instrumental and social competence and lower levels of problem behavior in both boys and girls at all developmental stages. The benefits of authoritative parenting and the detrimental effects of uninvolved parenting are evident as early as the preschool years and continue throughout adolescence and into early adulthood. Although specific differences can be found in the competence evidenced by each group, the largest differences are found between children whose parents are unengaged and their peers with more involved parents. Differences between children from authoritative homes and their peers are equally consistent but somewhat smaller (Weiss & Schwarz, 1996). Just as authoritative parents appear to be able to balance their conformity demands with their respect for their children's individuality, so children from authoritative homes appear to be able to balance the claims of external conformity and achievement demands with their need for individuation and autonomy.

Influence of Sex, Ethnicity, or Family Type

It is important to distinguish between differences in the distribution and the correlates of parenting style in different subpopulations. Although in the United States authoritative parenting is most common among intact, middle-class families of European descent, the relationship between authoritativeness and child outcomes is quite similar across groups. There are some exceptions to this general

statement, however: (1) demandingness appears to be less critical to girls' than to boys' well-being (Weiss & Schwarz, 1996), and (2) authoritative parenting predicts good psychosocial outcomes and problem behaviors for adolescents in all ethnic groups studied (African-, Asian-, European-, and Hispanic Americans), but it is associated with academic performance only among European Americans and, to a lesser extent, Hispanic Americans (Steinberg, Dornbusch, & Brown, 1992; Steinberg, Darling, & Fletcher, 1995). Chao (1994) and others (Darling & Steinberg, 1993) have argued that observed ethnic differences in the association of parenting style with child outcomes may be due to differences in social context, parenting practices, or the cultural meaning of specific dimensions of parenting style.

Conclusion

Parenting style provides a robust indicator of parenting functioning that predicts child well-being across a wide spectrum of environments and across diverse communities of children. Both parental responsiveness and parental demandingness are important components of good parenting. Authoritative parenting, which balances clear, high parental demands with emotional responsiveness and recognition of child autonomy, is one of the most consistent family predictors of competence from early childhood through adolescence. However, despite the long and robust tradition of research into parenting style, a number of issues remain outstanding. Foremost among these are issues of definition, developmental change in the manifestation and correlates of parenting styles, and the processes underlying the benefits of authoritative parenting (see Schwarz et al., 1985; Darling & Steinberg, 1993; Baumrind, 1991; and Barber, 1996).

Final Thoughts on Parenting

The most important thing to remember about parenting/caregiving is that you can be a better, more objective and effective parent/caregiver when you are directing your actions toward the child's needs and while considering what they can reasonably be expected to do at their stage of development. Parenting/caregiving is more difficult when you are tired and have psychological needs that interfere with the relationship. Some of the best advice is to try not to take the child's actions personally and be as objective as possible.

The impact of class and culture cannot be ignored when examining parenting/caregiving 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. However, 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 can be viewed in a different light.

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/caregiving styles called *Class and Conformity*, Kohn (1977) explains that parents/caregivers tend to emphasize qualities that are needed for their own survival when parenting their children. Working class parents/caregivers 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/caregivers 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/caregivers encourage their children to have those qualities as well by rewarding independence and self-reliance. Parenting/caregiving styles can reflect many elements of culture.

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5.7: Early Childhood - Final Notes

Child Care Concerns

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 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 higher 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 the 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.

Childhood Stress and Development

What is the impact of stress on child development? Children experience different types of stressors. Normal, everyday stress can provide an opportunity for young children to build coping skills and poses little risk to development. Even more long-lasting stressful events such as changing schools or losing a loved one can be managed fairly well. But children who experience toxic stress or who live in extremely stressful situations of abuse over long periods of time can suffer long-lasting effects. The structures in the midbrain or limbic system such as the hippocampus and amygdala can be vulnerable  to

prolonged stress during early childhood (Middlebrooks and Audage, 2008). High levels of the stress hormone cortisol can reduce the size of the hippocampus and effect the child's memory abilities. Stress hormones can also reduce immunity to disease. The brain exposed to long periods of severe stress can develop a low threshold making the child hypersensitive to stress in the future. However, the effects of stress can be minimized if the child has the support of caring adults.

In the next lesson, we continue to look at childhood as we examine the period between starting school and entering adolescence known as middle childhood.

Summary

Early childhood is sometimes referred to as the preschool years. This is a period of the life span after infancy and before the child begins formal schooling. This is typically from ages 3 to 5 or 2 to 6 years.

First, let's examine physical growth.

There is considerable difference in the body proportions of a child entering and exiting this stage. Toddlers have large heads and stomachs and short arms and legs. But 6 year old children tend to have longer, leaner bodies as their torso lengthens.

The rate of physical growth in early childhood is slower than what was found in infancy. Overall physical growth is at the rate of about 3 inches in height per year. And about 4.5 pounds of weight is gained each year. The average 6 year old in the United States is about 46 inches tall and weighs about 46 pounds. This slower growth rate translates into a smaller appetite for children between ages 2 and 6 years.

This diminished appetite means these children are vulnerable to nutritional deficiencies. This is particularly true if those small appetites are satisfied with foods poor in nutrition. Preschoolers can suffer iron deficiencies particularly if they drink too much cow's milk which interferes with the body's ability to absorb iron. Children in the United States consume too many high fat, high sugar junk foods. And while the effects of such poor nutrition might not be immediately evident, the preference for eating such intensely sugary and fatty foods is being established and can interfere with nutrition for years to come.

How can you avoid setting up eating problems in this age group? The following tips are directed toward establishing reasonable expectations about food and avoiding associating food with psychological needs.

- First, don't try to force feed your child or fight with them over food.
- Recognize that appetites vary and adjust accordingly.
- Keep mealtime pleasant and as a time for family members to unite and enjoy one another's company.
- Don't become a short order chef. Choose a reasonable menu that all can share.
- Limit choices, particularly when allowing young children to make selections. Too many options can be confusing.
- Serve balanced meals. Take the time to think about nutrition and prepare meals that are healthy.
- Don't bribe the child with food. Offering certain foods as rewards can set up a hierarchy of good and bad foods which can get in the way of eating healthy meals.

Now let's turn our attention to the brain. During early childhood, the brain continues to grow and mature. At age 2, the brain is 75% its adult weight. By age 6, it's at 95 percent its adult weight. And by 7, the brain is about 100% its adult weight. Changes in the child's ability to override emotional outbursts and to coordinate movement are seen as the cortex continues to mature. Visual pathways continue to be established and the child becomes able to reproduce what is seen on paper when drawing. The left hemisphere of the brain undergoes a growth spurt between ages 3 and 6 facilitating language skills. The right hemisphere grows throughout childhood improving spatial skills, and the recognition of shapes and patterns. Corpus callosum also grows between 3-6 years.

Gross motor skill development occupies much of the life of a young child. Running, jumping, swinging, and learning to ride a bicycle are all examples of gross motor skills. Many childhood songs combine music and words with large physical movements. Can you think of any examples? How about "Head and Shoulders, Knees and Toes"? Remember that one?

Young children are also practicing their fine motor skills by learning to pour, using scissors, and coloring. Early childhood classrooms include a number of activities for improving fine motor skills. Many songs and children's activities incorporate fine motor skills. Have you ever heard the song, "The Itsy Bitsy Spider"?

Let's continue our look at cognitive development.

Recall Piaget's second stage of cognitive development: **preoperational intelligence**. Early childhood is a time of learning to use thought to solve problems and learning to know and communicate about the world through the use of symbols, primarily language. Now the child can think about what happened several days ago or image an event. Watch closely and you may see a child surprised by being able to hear a song in their head. "Wow! I can hear a song and it's playing in my head!" Being able to think about the world in this new way doesn't mean that the child is logical about how the world works. Preoperational thought is 'prelogical' or before logical. Instead, there may be a tendency to believe that everyone sees the world through the child's eyes. I'll give you an example. One child came up to me at around Halloween (October) and said "I know why god put skin on people." "Oh, really? Why?" I responded. The child proudly reported, "So they wouldn't be scary to little kids!"

Here are some other aspects of preoperational thought. Children love to play out roles at this age. This type of play, called sociodramatic play, allows them to take on a role fully and think about how to speak and act as well as what kinds of props are needed to become the part.

Syncretism refers to thinking that if two events occur simultaneously, one must have caused the other. A child whose mother brought a baby with her when she last left the hospital may think that a new visit to the same building will produce another child!

Egocentrism is one of Piaget's early concepts that refer to how these children assume that everyone thinks the way that they do. Try reading to a child and they may ask, "Where am I in the story?" They believe that they are at the center of activity. Or you may hear a child ask whether a character in a movie or cartoon loves them? That's an odd question, unless you're a 3 year old.

Animism is the thought that objects have lifelike qualities. Be sure to watch the video clip in your lesson. It's an attempt to help young children distinguish between living and non-living objects.

Piaget challenged children's ability to understand how to classify objects. For example, in this image showing numerous red buttons and a single green button, you have objects that can be classified in several ways. If you ask a 3 year old, "What are there more of? Red things, green things, or buttons?" The child will probably respond, "Red things" not recognizing that all are buttons.

Piaget's experiments on **conservation** of matter indicated that children have numerous misconceptions about matter. For example, if a container of water is poured into two differently shaped containers so that the water levels now vary, the child may think that the higher water level indicates more liquid. Or a child may think that if one line moves further to the right, it is more or if one row of pennies is widely spaced apart, it has more.

The **theory of mind** is the understanding that other people have different thoughts than one's own. This realization replaces egocentrism and occurs between ages 3 and 5, typically; or around age 4. This knowledge of other's mental states can aid in social relationships. It serves as our everyday mindreading. It can be absent or difficult for children with autism spectrum disorders. Such children may not be able to appreciate other's mental states, depending on the level of severity of the disorder.

Vocabulary grows at the rate of 10 to 20 new words per day and the child has a vocabulary of approximately 10,000 words by age 6.

However, children do not have a complete understanding of words. For example, a child may not understand that the expression, "time flies" simply means that time passes quickly. Children tend to learn nouns more easily than verbs, even in more verb-friendly languages such as Chinese. Rules of grammar may be misapplied. An example of such over-regularization is found in statements such as "I goed there." Or, "I doed that!" in which adding ed to the end of the word is used to indicate past tense incorrectly.

Remember Vygotsky's zone of proximal development? This is the potential a child may achieve through guided participation. Language, both verbal and non-verbal is the vehicle of this guidance. Do you ever talk to yourself? When and why? Chances are you talk to yourself as an adult only when you want to express an emotion or clarify your thoughts. This inner speech is not the same as the speech you use when communicating with others; it's short and to the point. But when you were learning to use language, you may have struggled as you began to use words to communicate ideas to others. You probably spoke aloud. Then words became directed toward your own behavior. You may have talked to yourself with a sort of running commentary about your own activities and feelings as you learned to think using words. Gradually, this egocentric speech (spoken when alone) became private speech, or thinking in language. Inner speech is only spoken aloud if thoughts need to be clarified or emotion expressed.

Now we turn our attention toward psychosocial development in early childhood. We'll explore self-concept, gender identity, and family life.

A **self-concept** is one's own perception or image of self. We aren't born with a self-concept. It develops through interaction with others. Usually these others are those close to us like parents, siblings, or peers. Let's look at two theories of self-based on interaction.

Charles Horton Cooley used the metaphor of a mirror or looking-glass when describing this process. Our self-concept develops when we look at how those around us respond to us, how we look, what we say, and what we do. We then use their reactions to make self-judgments. If those around us respond favorably to us, we'll form a positive sense of self. But if those around us respond with criticism and insult, we interpret that as evidence that we are not good or acceptable. But those around us may respond to us based on more than our own performance or worth. Perhaps they don't notice what we do well or are reluctant to comment on it. As a result, we may have an inaccurate self-concept. And there may be certain periods in life in which we are more self-conscious or concerned with how others view us. Early childhood may be one of those times as children are piecing together a sense of self.

George Herbert Mead also focused on social interaction as important for developing a sense of self. He divided the self into two parts: the "I" or the spontaneous part of the self that is creative and internally motivated, and the "me" or the part of the self that takes into account what other people think. The key to living well is to find ways to give expression to the "I" with the approval of

the “me”. In other words, find out how to be creative and do what you care about within the guidelines of society. The I is inborn. But the me develops through social interaction and a process called “taking the role of the other.” A child first comes to take the role of a significant other person, typically a parent or sibling. A child, who has been told not to do something, may be found saying “no” to himself. Gradually, the child will come to understand how the generalized other, or society at large, comes to view actions. Now a behavior is not just wrong according to a significant other person, it is wrong as a rule of society. In this way, cultural expectations become part of the judgment of self.

Early self-concepts can be quite exaggerated. A child may want to be the biggest, or be able to jump the highest, or to have the longest hair. This exaggerated sense of self is external; the child emphasizes outward expressions and responses in developing a sense of self.

Older children tend to become more realistic in their sense of self as they start comparing their own behavior with that of others.

Erikson views early childhood as a time of building on autonomy and taking initiative. The child wants to think of an activity and carry it out without interference of others.

Early childhood is also a time of developing gender identification or a sense of self based on gender. You may recall Freud’s theory of the phallic stage in which the child develops a sense of masculinity or femininity. Nancy Chodorow believed that mothers promote gender specific behavior in the way they interact with sons and daughters. Daughters are kept close and dependent while sons are encouraged to be independent and assertive. Cognitive theory suggests that children actively seek their gender roles through a gender schema in which they sort their world into male and female categories. They ask whether activities, objects, colors, and mannerisms are for boys or girls.

Learning theorists focus on the ways in which children are reinforced for gender stereotypic behavior and how modeling and media images promote gender stereotypic behaviors. The focus is on how society imposes gender expectations on children.

How is gender taught? The training is said to begin in infancy as parents treat their sons and daughters differently. In some cultures it means cuddling and speaking to daughters, while directing sons toward outside activities. Sons are given more freedom and less supervision than daughters. And daughters may be given unnecessary assistance thus undermining their confidence. Teachers call on boys more often in the classroom and schools may direct students into certain fields of study based on gender rather than ability. Friends have a different code of behavior for girls than for boys. Girls focus on closeness in friendship whereas boys may focus more on competition.

Is gender taught or do children seek out how to behave based on their sex? Gender expectations are taught and messages are presented in the media, in the schools, among friends, and by family members. But children also vary in the extent to which they follow the roles presented. There is an interactive role between the individual and society’s expectations with respect to gender. This is called “doing gender” (also called “gender performance”). It means that we approach these expectations and respond to them in a variety of ways, depending on individual motives and attributes.

Think of your parents/caregivers. How would you describe their style of parenting/caregiving? Are they consistent? Were they alike in their approach to discipline and support? Here are two models of parenting/caregiving styles. You may be able to identify your own parents/caregivers to some extent in these descriptions. Of course, these models represent clear categories. Real parents/caregivers often fall somewhere in between.

Diane Baumrind’s model classifies parents/caregivers in several ways based on the amount and direction of communication they have with their children, their level of warmth, and the level of maturity expected from the child. The **authoritarian** model is a traditional model in which the parents/caregivers are in control. Children are expected to be obedient and respectful. These parents/caregivers have low warmth and high maturity demands for their children. The **permissive** model is one in which parents/caregivers allow children to make the rules. These parents/caregivers show a good deal of warmth, but have trouble setting limits. The authoritative model is parenting that is strict within reason and that is accompanied by affection. Children have some say in making rules and the exchanges are warm. This is also known as **democratic** parenting and is the model favored by Baumrind. The parenting program called “Love and Logic” is a good example of this model. Uninvolved parents/caregivers are unresponsive and non-demanding. As a consequence, their children may have difficulty in social relationships, school, and other areas.

LeMaster’s and DeFrain’s model focuses on what parents/caregivers are trying to accomplish when parenting. It offers a glimpse at the psychological motivation of the parent suggesting that a parent’s psychological needs rather than the child’s developmental needs are frequently being addressed when parenting. The **martyr** is the type of parent/caregiver who will do anything for their

child; even those things that children should and could do on their own. This is to help the parent/caregiver feel in control through self-sacrifice with the expectation that the child will be indebted to them. The **pal** is lonely and wants a friend. The **pal** lets the child do what they want in hopes that the child will spend time with the parent and satisfy their need for companionship. The **police officer/drill sergeant** wants direct control and gives the child many obedience tests. Obedience tests are often meaningless activities with the sole purpose of showing the child who is in control. The **teacher-counselor** parent/caregiver is one who probably pays too much attention to what the “experts” have to say about parenting. The teacher-counselor takes all responsibility for the child’s behavior and thinks that if they just do the right things, they can have a perfect child. The **athletic coach** is the preferred model. It involves being objective and consistent in parenting/caregiving and allowing the child to learn by doing.

Which model is best? It turns out that showing concern, warmth, and support is the most important ingredient. The way this care and concern is demonstrated depends on culture.

Since the dramatic increase of women in the labor force, we’ve seen many studies done to evaluate the impact of childcare on child development. Most of this attention has been devoted to looking at formal preschools and day care programs and the teacher-child ratios, type of environments, and activities available. The conclusion has been that day care that is stimulating and provides adequate attention to children is beneficial and sometimes superior to the world of children staying at home. In some parts of the world, child care concerns are more about safety and healthcare. Market Women in Liberia are women who sell small items as street or market vendors. These women are providers for their families and also take care of their children. Day care is not available to them so their children accompany them to the markets. These markets are crowded and often near waste dumps. Recently, there has been a nationwide effort to improve the conditions for children in the market places and to offer social services such as nutrition and health care for the children. You can learn more in your reading. Certainly, childcare concerns are varied throughout the world.

Some amount of stress is normal in the lives of children. Normal stress includes everyday frustrations and disappointments and minor illness. These stressors can in fact be good life lessons for children and do not cause harm. But toxic stress is long-term and undermines a child’s sense of safety and support. This might come from living in an abusive household or one filled with neglect. Or it might be due to the lack of safety and fear that results from living in a crime-ridden community or with war. Prolonged stress leads to the production of stress hormones such as cortisol. Normally, these hormones help the body prepare to take action and get out of harm’s way. But prolonged exposure reduces our immunity to disease and leads to problems with digestion, blood pressure, and muscle tensions. In early childhood, our brains are building wiring systems in response to our environments. A child who undergoes chronic, intense stress can develop a low threshold to stress within the brain circuitry. Such a child may be nervous or hyper-vigilant. Having a caring, supportive parent or other caregiver can reduce the impact of toxic stress.

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CHAPTER OVERVIEW

6: Middle Childhood

- 6.1: Middle Childhood - What Will You Learn?
- 6.2: Physical Development During Middle Childhood
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- 6.4: Language, Moral Development, and Intelligence
- 6.5: Psychosocial Development in Middle Childhood - Self Concept and Self Efficacy
- 6.6: The Family

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6.1: Middle Childhood - What Will You Learn?

After reading "Middle Childhood" you should be able to:

1. Describe physical growth during middle childhood.
2. Describe different types of intelligence.
3. Compare Gardner's theory of multiple intelligences and Sternberg's triarchic theory of intelligence.
4. Explain information processing theory of memory.
5. Characterize language development in middle childhood.
6. Compare preconventional, conventional, and postconventional moral development.
7. Explain how Kohlberg measured morality.
8. Define self-efficacy.
9. List the major factors that influence self-efficacy.
10. Explain how self-efficacy develops.



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6.2: Physical Development During Middle Childhood

Middle childhood (also referred to as middle and late childhood) is the period of life that begins when children enter school (somewhere around age 6-12) and lasts until they reach adolescence. Early childhood and adolescence seem to get much more attention than middle childhood. Perhaps this is because growth patterns slow a bit at this time, the selfish "id" becomes hidden during the latent stage, according to Freud, and the majority of children (in the United States) tend to spend much more time in school, with friends, and in structured activities. It may be easy for parents and caregivers to lose track of their children's development unless they stay directly involved in their day-to-day world and interests. It is also important for parents and caregivers to pause in their own busy lives and give full attention to middle childhood to stay in touch with these children and to take notice of the varied influences on their lives in a larger world.

Growth Rates and Motor Skills

Middle childhood has been called the "golden age" of childhood. Overall, children are relatively healthy during this period. Growth rates slow and children start gaining about 5-7 pounds in weight and 2 inches in height each year. Many children begin to slim down as their torsos become longer. A child at this age can have strong muscles and increased lung capacity to enable them to play for long periods of time. The brain reaches its adult size at about age 7. The school-aged child can 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. And, as the myelin continues to develop (myelin speeds the conduction of nerve impulses, among many other benefits), the child's reaction time and motor abilities also improve. 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.



Figure 6.2.1 (Unsplash license; [Lars Bo Nielsen](#) via [Unsplash](#))

Organized Sports: Pros and Cons

Middle childhood seems to be a great time to introduce children to organized sports. And, in fact, many parents and caregivers do. Sports activity has been reported to help children build social skills, improve athletically and learn a sense of teamwork. It has been suggested, however, that the emphasis on competition and athletic skill 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 overly-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 (Player Development Initiatives, October, 2017).

Death and Overall Health in Middle Childhood

While children in the United States are most likely to die due to accidents, this may not be the case in many other countries. Tragically, children still die due to malnutrition and diseases. The good news is that these preventable deaths have declined considerably since 1990. At the same time, however, deaths due to accidents have only declined slightly.

Leading Causes of Death (United States, 2023)

5-10 years of age

- Accidents (unintentional injuries)
- Cancer
- Congenital malformations, deformations and chromosomal abnormalities

10-14

- Accidents (unintentional injuries)
- Intentional self-harm (suicide)
- Cancer

The information provided above was obtained from the CDC ([Centers for Disease Control and Prevention](#)).

Childhood Obesity

While the topic of obesity is a complex one, over the past four decades, we have witnessed childhood obesity grow to epidemic proportions. As of 2019, more than 13 million children and adolescents are obese or overweight. That's roughly one child in every three (U. S. Department of Health and Human Services, 2017, HHS.gov). This is defined as being at least 20 percent over their ideal weight. The prevalence of obesity and severe obesity increases with age. While percentages vary by region, in 2015-2016, the rates of obesity in the United States was 18.4% for children ages 6 to 11 ([stateofobesity.org/childhood-obesity-trends](#)).

Prevalence of Childhood Obesity in the United States (CDC, 2024)

Childhood obesity is a serious problem in the United States putting children and adolescents at risk for poor health. Obesity prevalence among children and adolescents is still too high.

For children and adolescents aged 2-19 years¹:

- The prevalence of obesity was 18.5% and affected about 13.7 million children and adolescents.
- Obesity prevalence was 13.9% among 2- to 5-year-olds, 18.4% among 6- to 11-year-olds, and 20.6% among 12- to 19-year-olds. Childhood obesity is also more common among certain populations.
- Hispanics (25.8%) and non-Hispanic blacks (22.0%) had higher obesity prevalence than non-Hispanic whites (14.1%).
- Non-Hispanic Asians (11.0%) had lower obesity prevalence than non-Hispanic blacks and Hispanics.

¹Read [CDC National Center for Health Statistics \(NCHS\) data brief pdf icon\[PDF-603KB\]](#)

Note: Obesity is defined as a body mass index (BMI) at or above the 95th percentile of the CDC sex-specific [BMI-for-age growth charts](#).

Obesity and Socioeconomic Status (CDC, 2019)

[[Read the Morbidity and Mortality Weekly Report \(MMWR\)](#)]

- The prevalence of obesity decreased with increasing level of education of the household head among children and adolescents aged 2-19 years.
- Obesity prevalence was 18.9% among children and adolescents aged 2-19 years in the lowest income group, 19.9% among those in the middle income group, and 10.9% among those in the highest income group.
- Obesity prevalence was lower in the highest income group among non-Hispanic Asian and Hispanic boys.
- Obesity prevalence was lower in the highest income group among non-Hispanic white, non-Hispanic Asian, and Hispanic girls. Obesity prevalence did not differ by income among non-Hispanic black girls.

Some Reasons

This is true in part because of the introduction of a steady diet of television, computer and smart phone screen time increase and other sedentary activities. In addition, we have come to emphasize high fat, fast foods as a culture. Processed pizza, hamburgers, chicken nuggets and “lunchables” with soda have replaced more nutritious foods as staples.

Some Consequences

Children who are overweight tend to be ridiculed and teased by others. This can certainly be damaging to their self-image and sense of value. In addition, obese children run the risk of struggling with orthopedic problems such as knee injuries, and an increase risk of heart disease and stroke in adulthood. It can 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 and weight can be correlated with that in some individuals.

Some Recommendations

Dieting is not really the answer. If you diet, your basal metabolic rate tends to decrease thereby making the body burn even fewer calories in order to maintain the weight. Eating less processed foods and consuming whole foods is generally a better option than dieting (think in terms of fresh food you prepare vs. highly processed foods that come out of a box as a guideline). Increased activity is also much more effective than dieting in improving the child’s (and adult’s, too) health and psychological well-being. Physical movement reduces stress, releases “feel-good” neurochemicals and being an overweight child, subjected to the ridicule of others can certainly be stressful. Parents and caregivers could 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 usually most helpful as is a whole-person perspective, meaning taking into account a person’s own ability levels, food allergies and so on.



Figure 6.2.2: The key to a healthy weight is healthy choices (Unsplash license; [Sarah Gualtieri](#) via [Unsplash](#))

A Look at School Lunches

On paper, the National School Lunch Program is great. It is designed to provide kids with low-cost, nutritionally balanced meals that are based on constantly updated guidelines from the USDA. The purpose of the NSLP is to get food to kids of every social status with minimal issues. Of course, when the lunches finally end up in front of the kids, they look very different from what other kids are eating across the world. (Andress, J. 2017). 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 white flour pasta alfredo (cream based sauce), processed, white flour bread stick, peach cup (rather than a fresh, whole peach), tomato soup, a highly processed brownie, and 2% pasteurized milk and is considered in compliance with Federal Nutritional Guidelines of 108% calories, 24 % protein, 55 % carbohydrates, 27% fat, and 8% saturated fats, according to the website. Students may also purchase chips, cookies, or ice cream along with their meals. Many school districts rely on the sale of desert and other items in the lunchrooms to make additional revenues. Many children purchase these additional items and so our look at their nutritional intake should also take this into consideration.



Figure 6.2.3: A typical school lunch in America might consist of highly processed food such as a hot dog on a white flour bun with french fries and no other vegetables. (Unsplash license; [Wade Austin Ellis](#) via [Unsplash](#))

Now...Consider another menu from an elementary school in the state of Washington. This sample meal consists of a chicken burger, baked tater tots, fruit and veggies and 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 deserts such as cookies or ice cream.

Of course, children eat away from school as well. Listen to NPR's [Kids Have Easy Access to Junk Food](#) to hear a story about how advertising and fast food restaurant locations may influence children's diets.

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6.3: Cognitive Development During Middle Childhood

Piaget - From Infancy to Middle Childhood

- Infancy - Sensorimotor - Knowing is sensing and doing, object permanence is lacking
- Early childhood - Preoperational - Egocentrism, centration, lacking conservation
- Middle childhood - Concrete operational - More logical, exhibit conservation and understand reversibility

You should recall that during early childhood children are in the **preoperational stage**. During the preoperational stage we see egocentrism and a lack of conservation. According to Piaget, during early childhood children are learning to think symbolically about the world. Let's now move on to the next stage in Piaget's theory.

Concrete Operational Thought

From ages 7 to 11, the school-aged child is in what Piaget referred to as the concrete operational stage of cognitive development. This involves mastering the use of logic in concrete ways. The child can use logic to solve problems tied to their own direct experience but has trouble solving hypothetical problems or considering more abstract problems. 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 principles of cause and effect, size, and distance. The child uses inductive reasoning which means thinking that the world reflects one's own personal experience. For example, a child has one friend who is rude, another friend who is also rude, and the same is true for a third friend. The child may conclude that friends are rude. (We will see that this way of thinking tends to change during adolescence being replaced with deductive reasoning.)

Classification

As children's experiences and vocabularies grow, they build schemes or schemas (schemas can be defined as a set of linked mental representations of the world, which we use both to understand and to respond to situations) and are able to classify objects in many different ways. Look at the word below and write a list of the ways in which it could be classified:

BALL

(Compare your list with the one at the end of the lesson.)

Identity

One feature of concrete operational thought is the understanding that objects have an identity or qualities that do not change even if the object is altered in some way. For instance, mass of an object does not change by rearranging it. A piece of chalk is still chalk even when the piece is broken in two. You should recall that this was lacking during the preoperational stage ("lacking conservation").

Reversibility

The child learns that some things that have been changed can be returned to their original state. 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. (If you have access to children's school papers, look for examples of these.)

Reciprocity

Remember the example in our last lesson of children thinking that a tall beaker filled with 8 ounces of water was "more" than a short, wide bowl filled with 8 ounces of water? Concrete operational children can understand the concept of reciprocity which means that changing one quality (in this example, height or water level) can be compensated for by changes in another quality (width). So there is the same amount of water in each container although one is taller and narrower and the other is shorter and wider.

Conservation

While a preoperational child will think that a tall beaker filled with 8 ounces of water is "more" than a short, wide bowl filled with 8 ounces of water, children in this stage don't make that error. Concrete operational children can understand the concept of conservation which means that changing one quality (in this example, height or water level) can be compensated for by changes in another quality (width). Consequently, there is the same amount of water in each container, although one is taller and narrower and the other is shorter and wider.

Decentration

Concrete operational children no longer focus on only one dimension of any object (such as the height of the glass) and instead consider the changes in other dimensions too (such as the width of the glass). The cognitive limitation of centration is no longer interfering with exhibiting conservation.

Seriation

Arranging items along a quantitative dimension, such as length or weight, in a methodical way is now demonstrated by the concrete operational child. For example, they can methodically arrange a series of different-sized sticks in order by length, while younger children approach a similar task in a haphazard way.

These new cognitive skills increase the child's understanding of the physical world, however according to Piaget, they still cannot think in abstract ways. Additionally, they do not think in systematic scientific ways. For example, when asked which variables influence the period that a pendulum takes to complete its arc, and given weights they can attach to strings in order to do experiments, most children younger than 12 perform biased experiments from which no conclusions can be drawn (Inhelder & Piaget, 1958).

Information Processing Theory

Information processing theory is a classic theory of memory that compares the way in which the mind works to computer storing, processing and retrieving information.

There are three levels of memory:

1. **Sensory register:** Information first enters our sensory register. Stop reading and look around the room very quickly. (Yes, really. Do it!) Okay. What do you remember? Chances are, not much. Everything you saw and heard entered into your sensory register. And although you might have heard yourself sigh, caught a glimpse of your dog walking across the room, and smelled the soup on the stove, you did not register those sensations. Sensations are continuously coming into our brains, and yet most of these sensations are never really perceived or stored in our minds. They are lost after a few seconds because they were immediately filtered out as irrelevant. If the information is not perceived or stored, it is discarded quickly.
2. **Working memory:** (short-term memory): If information is meaningful (either because it reminds us of something else or because we must remember it for something like a history test we will be taking in 5 minutes), it makes its way into our working memory. This consists of information of which we are immediately aware. All of the things on your mind at this moment are part of your working memory. There is a limited amount of information that can be kept in the working memory at any given time. So, if you are given too much information at a time, you may lose some of it. (Have you ever been writing down notes in a class and the instructor speaks too quickly for you to get it all in your notes? You are trying to get it down and out of your working memory to make room for new information and if you cannot "dump" that information onto your paper and out of your mind quickly enough, you lose what has been said.) Information in our working memory must be stored in an effective way in order to be accessible to us for later use. It is stored in our long-term memory or knowledge base.
3. **Knowledge base:** (long-term memory): This level of memory has an unlimited capacity and stores information for days, months or years. It consists of things that we know of or can remember if asked. This is where you want information to ultimately be stored. The important thing to remember about storage is that it must be done in a meaningful or effective way. In other words, if you simply try to repeat something several times in order to remember it, you may only be able to remember the sound of the word rather than the meaning of the concept. So if you are asked to explain the meaning of the word or to apply a concept in some way, you will be lost. Studying involves organizing information in a meaningful way for later retrieval. Passively reading a text is usually inadequate and should be thought of as the first step in learning material. Writing key words,

thinking of examples to illustrate their meaning, and considering ways that concepts are related are all techniques helpful for organizing information for effective storage and later retrieval.

During middle childhood, children are able to learn and remember due to an improvement in the ways they attend to and store information. As children enter school and 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. New experiences are similar to old ones or remind the child of something else about which they know. This helps them file away new experiences more easily.

They also have a better understanding of how well they are performing on 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. While preschoolers may spend as much time on an unimportant aspect of a problem as they do on the main point, school aged children start to learn to prioritize what is significant and what is not. They develop **metacognition** (awareness and understanding of one's own thought processes; knowing about knowing) and the ability to understand the best way to figure out a problem. **Metamemory**, an element of metacognition, also improves. Metamemory, an awareness and knowledge of memory, is critical to school success. Absent metacognition and metamemory, how can you learn material that requires purposeful and thoughtful processing? In addition, children in this stage learn new tools and strategies to assist them in learning and remembering. (such as “i before e except after c” so they know that “receive” is correct but “recieve” is not.)

References

Inhelder, B., & Piaget, J. (1958). *An essay on the construction of formal operational structures. The growth of logical thinking: From childhood to adolescence.* (A. Parsons & S. Milgram, Trans.). Basic Books. doi.org/10.1037/10034-000

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6.4: Language, Moral Development, and Intelligence

Language Development

Vocabulary

One of the reasons that children can classify objects in so many ways is that they have acquired a vocabulary to do so. By 5th grade, a child's vocabulary has grown to 40,000 words. It grows at the rate of 20 words per day, a rate that exceeds that of preschoolers. This language explosion, however, differs from that of preschoolers 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.

New Understanding

The child is 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 preschooler is likely to say "eat" or some word that describes what is done with a pizza. However, the school-aged child is more likely to place pizza in the appropriate category and say "food" or "carbohydrate".

This sophistication of vocabulary is also evidenced in the fact that school-aged children are able to tell jokes and delight in doing so. They may use jokes that involve plays on words such as "knock-knock" jokes or jokes with punch lines. Preschoolers do not understand plays on words and rely on telling "jokes" that are literal or slapstick such as "A man fell down in the mud! Isn't that funny?"

Grammar and Flexibility

School-aged children are also able to learn new rules of grammar with more flexibility. While preschoolers are likely to be reluctant to give up saying "I goed there," school-aged children will learn this rather quickly along with other rules of grammar.

While the preschool years might be a good time to learn a second language (being able to understand and speak the language), the school years may be the best time to be taught a second language (the rules of grammar).

Back to the "Ball classification activity": How many ways can you classify "ball"? It's a word, a round object, a toy, a shape, a rolling object, a piece of playground equipment, another word for "fun", etc.

Moral Development

Kohlberg's Stages of Moral Development

Lawrence Kohlberg (1963) built on the work of Piaget and was interested in finding out how our moral reasoning changes as we get older. He wanted to find out how people decide what is right and what is wrong (note: It could be argued that this is an antiquated theory that has become limited in its scope based by today's standards. However, it remains an important theory to understand as it set a foundation for other Lifespan Psychology theories that have since followed). In order to explore this area, Kohlberg read a story containing a "moral dilemma" to a group of children of different age groups. In the story, a man is trying to obtain an expensive drug that his wife needs in order to treat her cancer. The man has no money and no one will loan him the money he requires. He begs the pharmacist to reduce the price, but the pharmacist refuses. So, the man decides to break into the pharmacy to steal the drug. Then, Kohlberg asked the children to decide whether the man was right or wrong in his choice. Kohlberg was not interested in whether they said the man was right or wrong, he was interested in finding out how they arrived at such a decision. He wanted to know what they thought made something right or wrong.

Pre-conventional Moral Development

The youngest subjects seemed to answer based on what would happen to the man as a result of the act. For example, they might say the man should not break into the pharmacy because the pharmacist might find him and beat him (Oh my!). Or they might say that the man should break in and steal the drug and his wife will give him a big kiss. Right or wrong, both decisions were based on what would physically happen to the man as a result of the act. This is a self-centered approach to moral decision-making. He called this most superficial understanding of right and wrong pre-conventional moral development.

Conventional Moral Development

Middle childhood kids seemed to base their answers on what other people would think of the man as a result of his act. For instance, they might say he should break into the store, and then everyone would think he was a good husband. Or, he shouldn't because it is against the law. In either case, right and wrong is determined by what other people think. A good decision is one that gains the approval of others or one that complies with the law. He called this conventional moral development.

Post-conventional Moral Development

Older children were the only ones to appreciate the fact that this story has different levels of right and wrong. Right and wrong are based on social contracts established for the good of everyone or on universal principles of right and wrong that transcend the self and social convention. For example, the man should break into the store because, even if it is against the law, the wife needs the drug and her life is more important than the consequences the man might face for breaking the law. Or, the man should not violate the principle of the right of property because this rule is essential for social order. In either case, the person's judgment goes beyond what happens to the self. It is based on a concern for others; for society as a whole or for an ethical standard rather than a legal standard. This level is called post-conventional moral development because it goes beyond convention or what other people think to a higher, universal ethical principle of conduct that may or may not be reflected in the law. Notice that such thinking requires being able to think abstractly. Often this is not accomplished until a person reaches adolescence or adulthood.

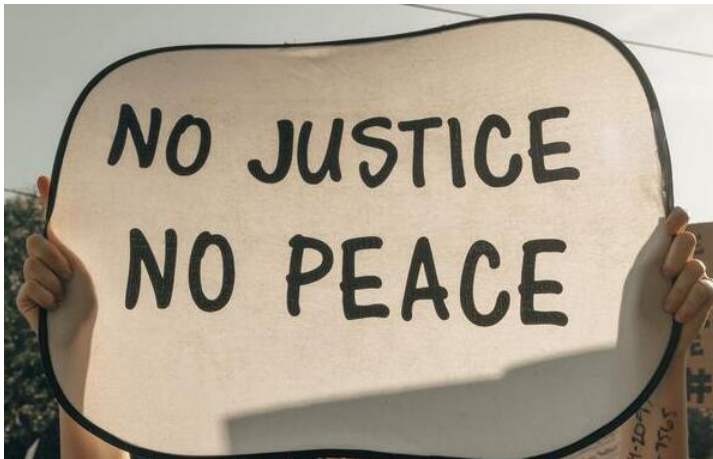


Figure 6.4.1: In Kohlberg's final stage, what is right and wrong is no longer determined by external forces. (Unsplash license; [Clay Banks](#) via [Unsplash](#))

Consider your own 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?

Theories of Intelligence

Intelligence tests and psychological definitions of intelligence have been heavily criticized since the 1970s for being biased in favor of White, 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 then, the best answer.

Multiple Intelligences

The Theory of Multiple Intelligences, advanced by Howard Gardner, argues that there are multiple types of intelligence in people. In fact, Gardner (1998, 1999, 2001) suggests that there are at least nine domains of intelligence. The first three are skills that are measured by IQ tests:

- **Logical-mathematical:** the ability to solve mathematical problems; problems of logic, numerical patterns.
- **Linguistic:** vocabulary, reading comprehension, function of language.
- **Spatial:** visual accuracy, ability to read maps, understand space and distance.

The next six represent skills that are not measured in standard IQ tests but are talents or abilities that can also be important for success in a variety of fields: These are:

- **Musical:** ability to understand patterns in music, hear pitches, recognize rhythms and melodies.
- **Bodily-kinesthetic:** motor coordination, grace of movement, agility, strength.
- **Naturalistic:** knowledge of plants, animals, minerals, climate, weather.
- **Interpersonal:** understand the emotion, mood, motivation of others; able to communicate effectively.
- **Intrapersonal:** understanding of the self, mood, motivation, temperament, realistic knowledge of strengths, weaknesses.
- **Existential:** concern about and understanding of life's larger questions, meaning of life, or spiritual matters.

Gardner contends that these are also forms of intelligence. A high IQ does not always ensure success in life or necessarily indicate that a person has common sense, good interpersonal skills or other abilities important for success.

Triarchic Theory of Intelligence

Another alternative view of intelligence is presented by Howard Sternberg (1997; 1999). Sternberg offers three types of intelligences. He described his frustration as a committee member charged with selecting graduate students for a program in psychology. He was concerned that there was too much emphasis placed on aptitude test scores and believed that there were other, less easily measured, qualities necessary for success in a graduate program and in the world of work. Aptitude test scores indicate the first type of intelligence-academic or analytic.

- **Componential** (academic or analytic skills): includes the ability to solve problems of logic, verbal comprehension, vocabulary, and spatial abilities.

Sternberg noted that students who have high academic abilities may still not have what is required to be a successful graduate student or a competent professional. To do well as a graduate student, he noted, the person needs to be creative.

- **Experiential** (creativity): the ability to apply newly found skills to novel situations.

A potential graduate student might be strong academically and have creative ideas, but still be lacking in the social skills required to work effectively with others or to practice good judgment in a variety of situations.

- **Practical** (contextual skills): the ability to use common sense and to know what is called for in a situation.

This type of intelligence helps a person know when problems need to be solved. Practical intelligence can help a person know how to conduct themselves in any given situation or what to wear for job interviews, when to get out of problematic relationships, how to get along with others at work, and when to make changes to reduce stress as some examples.

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6.5: Psychosocial Development in Middle Childhood - Self Concept and Self Efficacy

As we consider psychosocial development in middle childhood, we need to first consider what our psychodynamic theorists proposed for this age group. After considering the views of Erikson and Freud, we'll consider the status of the self and the advanced in self understanding that we see in this age group.

Erik Erikson - Industry vs. Inferiority

Erik Erikson proposed that we are motivated by a need to achieve competence in certain areas of our lives. As we've learned in previous chapters, Erikson's psychosocial theory has eight stages of development over the lifespan, 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.

During the middle childhood, children face the task of Industry versus Inferiority. Children begin to compare themselves to their peers to see how they measure up. They either develop a sense of pride and accomplishment in their schoolwork, sports, social activities, and family life, or they feel inferior and inadequate when they don't measure up.



Figure 6.5.1: The academic award this boy is receiving may contribute to his sense of industry. (CC BY-SA 4.0; Janarthanan kesavan via Wikimedia Commons)

According to Erikson, children in middle childhood are very busy or industrious. They are constantly doing, planning, playing, getting together with friends, 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 can be successful in their endeavors, they will get a sense of confidence for future challenges. If not, a sense of inferiority can be particularly haunting during middle childhood.

Ages, Periods of Development, and Stage Theories (All ages are approximated; infancy - middle childhood)

Age	Period	Erikson's Psychosocial Task	Freud's Psychosexual Stage	Piaget's Cognitive Stage
0–1	Infancy	Trust vs. Mistrust	Oral	Sensorimotor
1–3	Infancy/Toddlerhood	Autonomy vs. Shame/Doubt	Anal	Sensorimotor (0-2) Preoperational (2-7)
3–6	Early Childhood	Initiative vs. Guilt	Phallic	Preoperational
7–11	Middle Childhood	Industry vs. Inferiority	Latency	Concrete Operational

Sigmund Freud - Psychoanalytic Theory

The great psychoanalyst Sigmund Freud (1856–1939) focused on unconscious, biological forces that he felt shape individual personality. Freud (1933) thought that the personality consists of three parts: the id, the ego, and the superego. The id is the selfish part of the personality and consists of biological instincts that all babies have, including the need for food and, more generally, the demand for immediate gratification. As babies get older, they learn that not all their needs can be immediately satisfied and thus develop the ego, or the rational part of the personality. As children get older still, they internalize society's norms and values and thus begin to develop their superego, which represents society's conscience. If a child does not develop normally and the superego does not become strong enough, the individual is more at risk for being driven by the id to commit antisocial behavior.

Freud's developmental theory - his psychosexual stages - propose that we deal with inborn desires as we mature and how we resolve those desires impacts aspects of our personality. In middle childhood, we have the latency stage. This is effectively a pause, a break, between the gender issues resolved during the phallic stage - and the adult sexuality that ultimately develops during the genital stage.



Figure 6.5.2: Development of the superego helps children overcome their unconscious desire to behave antisocially. (Unsplash license; Annie Spratt via Unsplash)

Self-Concept

Children in middle childhood have a more realistic sense of self than do those in early childhood. Their self-descriptions are no longer focused on the physical and they have a sense of themselves as individuals with personalities and skills that exist within a

social context. 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 and family 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, hold influence over a child’s self-concept.

The Tweens

According to Erikson, children in middle childhood are very busy or industrious. They are constantly doing, planning, playing, getting together with friends, 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 can feel successful in their endeavors, they will gain a sense of confidence for many future challenges. If not, a sense of inferiority can be particularly haunting during middle childhood. Advertisers have certainly taken advantage of this age range by creating a new consumer group known as the “tweens” (for “in-between”). Tweens range in age from 8 to 12 years and are primarily targeted as consumers of media, clothing, and products that make them look “cool” and feel independent. For example, attitude t-shirts have been very popular among female tweens for the past several years and the slogans on these shirts reflect what might be considered “cool”. Here are a few found in a national retail clothing store that focuses on fashion for tweens.

- Your boyfriend gave me this shirt
- I live to shop
- It’s all about me
- You wish

In general, toys are not marketed to this age group as they once were. However, some toys designed to appeal to slightly younger children tend to sexualize children (Harmanci, 2006). Jean Kilbourne, a noted expert on the impact of advertising on self-image, responds to the promotion of such products as examples of how “marketers are hijacking our children’s sexuality” at the expense of childhood (Squire, 2006).

Self-Efficacy

What Is Self-Efficacy?

The term “self-efficacy” refers to your beliefs about your ability to effectively perform the tasks needed to attain a valued goal. Self-efficacy does not refer to your abilities, but to how strongly you believe you can use your abilities to work toward goals. Self-efficacy is not a single discrete construct or trait; rather, people have self-efficacy beliefs in different domains, such as academic self-efficacy, problem-solving self-efficacy, and self-regulatory self-efficacy. Stronger self-efficacy beliefs are associated with positive outcomes, such as academic fulfillment, greater activity satisfaction (such as athletics), happier relationships, and a healthier lifestyle. Note that the relationship here is correlational - which means strong self-efficacy beliefs appear to be related to positive outcomes, but we can’t conclude a causal connection.



Figure 6.5.1: It makes sense that if you believe you’re going to do well on a math test, you’ll do better than if you believe you won’t do well. But why should this be the case? (CC-BY; [Steven S.](#) via Flickr)

Imagine two students, Maria and Lucy, who are about to take the same math test. Maria 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 Maria 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? Maria, 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 Maria and Lucy—the student who got the A and the student who got the B-, respectively—is *self-efficacy*. As you will read later, 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 beliefs that they are 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). 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.

How Do We Measure Self-Efficacy?

Like many other concepts in psychology, self-efficacy is not necessarily measured in a straightforward manner and requires much thought to be measured accurately. Self-efficacy is unlike weight, which is simple to objectively measure by using a scale, or height, which is simple to objectively measure by using a tape measure. Rather, self-efficacy is an abstract concept you can't touch or see. To measure an abstract concept like self-efficacy, we use something called a self-report measure. A self-report measure is a type of questionnaire, like a survey, where people answer questions usually with answers that correspond to numerical values that can be added to create an overall index of some construct. For example, a well-known self-report measure is the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983). It asks questions like, “In the last month, how often have you been upset because of something that happened unexpectedly?” and “In the last month, how often have you been angered because of things that were outside of your control?” Participants answer the questions on a 1 through 5 scale, where 1 means “not often” and 5 means “very often.” Then all of the answers are summed together to create a total “stress” score, with higher scores equating to higher levels of stress. It is very important to develop tools to measure self-efficacy that take people's subjective beliefs about their self-efficacy and turn them into the most objective possible measure. This means that one person's score of 6 out of 10 on a measure of self-efficacy will be similar to another person's score of 6 out of 10 on the same measure.



Figure 6.5.2: How confident would you be about doing daily exercise if you had small children to take care of? Task-specific measures of self-efficacy would take this sort of circumstance into account. (CC BY-NC-SA 4.0; Ed Yourdon via Flickr)

We will discuss two broad types of self-report measures for self-efficacy. The first category includes measures of general self-efficacy (e.g., Schwarzer & Jerusalem, 1995; Sherer et al., 1982). These scales ask people to rate themselves on general items, such as “It is easy for me to stick to my aims and accomplish my goals” and “I can usually handle whatever comes my way.” It is worthy to note that self-efficacy is not a global trait, so there are problems with lumping all types of self-efficacy together in one measure. Thus, the second category of self-efficacy measures includes task-specific measures of self-efficacy. Rather than gauge self-efficacy in general, these measures ask about a person’s self-efficacy beliefs about a particular task. There can be an unlimited number of these types of measures. Task-specific measures of self-efficacy describe several situations relating to a behavior and then ask the participant to write down how confidently that person feels about doing that behavior. For example, a measure of exercise self-efficacy would list a variety of situations where it can be hard to exercise—such as when feeling depressed, when feeling tired, and when you are with other people who do not want to exercise. Finally, a measure of children’s self-regulatory self-efficacy would include a variety of situations where it can be hard to resist impulses—such as controlling temper, resisting peer pressure to smoke cigarettes, and defying pressure to have unprotected sex. Most studies agree that the task-specific measures of self-efficacy are better predictors of behavior than the general measures of self-efficacy (Bandura, 2006).

What Are the Major Influences on Self-Efficacy?

Here are some terms to know: If someone who seems similar to you succeeds, then you may come to believe that you will succeed as well. In this course, this description is termed “*vicarious performance*.” When you do well and succeed at a particular task, to attain a valued goal, you usually believe that you will succeed again at this task. This is called a “*performance experience*.” “*Verbal persuasion*” involves people telling you what they believe you are and are not capable of doing. Not all people will be equally persuasive! What you imagine yourself doing and how well or poorly you imagine yourself doing it is called “*imaginal performances*.” “*Affective states and physical sensations*” is the term for when you associate negative moods and negative physical sensations with failure, and positive physical sensations with success.

Self-efficacy beliefs are influenced in five different ways (Bandura, 1997).

Major Influences on Self-efficacy

Influence	Definition
Performance Experiences	When you do well and succeed at a particular task to attain a valued goal, 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	If someone who seems similar to you succeeds, then you may come to believe that you will succeed as well.
Imaginable 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.

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 believed your heart was racing because you had just had a lot of caffeine, it likely would not affect your performance. If you believed 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.

When and How Does Self-Efficacy Develop?



Figure 6.5.3: How does an effective coach impact self-efficacy? (CC0; NA via NA)

Our assessments of our own self-efficacy aren't created in a vacuum. Those around us (such as our parents and our friends) greatly influence our perceptions of self-efficacy.

Self-efficacy begins to develop in very young children and is an important feature in middle childhood (and beyond). Once self-efficacy is developed, it does not remain constant though—it can change and grow as an individual has different experiences throughout their lifetime. When children are very young, their parents/caregivers self-efficacies are important (Jones & Prinz, 2005). Children of those with high parental/caregiver self-efficacies perceive them as more responsive to their needs (Gondoli & Silverberg, 1997).

What Are the Benefits of High Self-Efficacy?

Academic Achievement

Consider academic self-efficacy in your own life and recall the earlier example of Maria and Lucy. Are you more like Maria, 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/caregivers to take a more active role in their children's learning, leading to better academic performance (Hoover-Dempsey, Bassler, & Brissie, 1987).

Much research exists about how self-efficacy is beneficial to school-aged children (middle childhood) but 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).

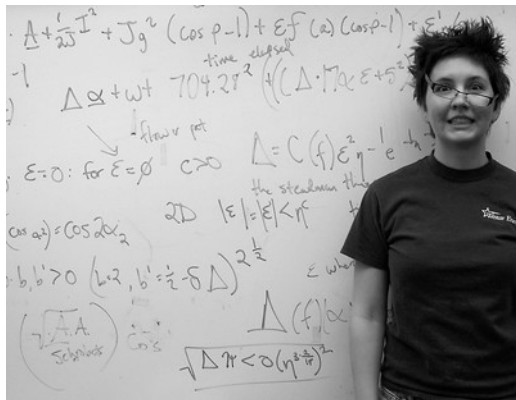


Figure 6.5.4: Consider getting a math problem you automatically believe you can't solve. Will you even attempt to answer it? Our perception of self-efficacy affects our motivation to engage with challenges in the first place. (CC BY 2.0; Andrea Allen via Flickr)

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.

Self-Regulation

One of the major reasons that higher self-efficacy usually leads to better performance and greater success in numerous areas 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 kid in middle childhood might be able to resist eating a pile of delicious cookies if they are in the room with the cookies for only a few minutes, but if that child were forced to spend hours with the cookies, their ability to regulate the desire to eat the cookies would probably wear down. Eventually, their 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.



Figure 6.55: Self-efficacy is all about your belief of control over your environment. But when cookies that look this good are nearby, you may feel like you have no control to resist eating one (or more). (CC0 Public Domain; NA via NA)

Middle childhood is a fantastic period in the lifespan to expand and encourage self-efficacy because it influences self-regulation in many ways (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).

Our own final words on self-efficacy also draw from children's literature. Again, middle childhood is a wonderful time to expand and encourage self-efficacy and the book, *Oh, The Places You'll Go!* by Dr. Seuss is all about self-efficacy. This book speaks directly to readers by talking about all of the challenges they might face on their journeys. Throughout the book, the narrator

continues to assure readers that they will be able to use their abilities to effectively handle these challenges. So, we leave you with Dr. Seuss' wise words: "You're on your own. And you know what you know. And you are the one who'll decide where to go.... And will you succeed? Yes! You will, indeed! 98 and 3/4 percent guaranteed."

The Society of Children

Friendships, in middle childhood, 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 or avoid it, 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/caregiver may be, being rejected by friends can often (but not always!) only be remedied by renewed acceptance.

Peer Relationships: Most children want to be liked and accepted by their friends. At this stage, children are sometimes identified by the ways in which they navigate peer connections, which can have a host of implications as you can imagine. Here, we take a brief look at some of the different styles children may use in peer connections: Some children are deemed popular by others and are described to be consistently kind to others and have stronger social skills. These "popular-prosocial" children tend to do well in school and are usually seen as cooperative and friendly. Another "popular" style is the "popular-antisocial" children who may gain popularity by acting tough or spreading rumors about others (Cillessen & Mayeux, 2004). Other styles exhibited by children in middle childhood are those in the category of rejected children who are sometimes excluded because they are shy and withdrawn. The "withdrawn-rejected" children are easy targets for bullies because they are unlikely to retaliate when belittled (Boulton, 1999). Other rejected children are ostracized because they are aggressive, loud, and confrontational. The "aggressive-rejected" children may be acting out of a feeling of insecurity. Unfortunately, their fear of rejection can lead to behaviors that brings further rejection from other children. Children who are not accepted are more likely to experience conflict, lack confidence, and have trouble adjusting.

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6.6: The Family

During middle childhood, children tend to spend less time with parents/caregivers and more time with peers. And parents/caregivers may have to modify their approach to parenting to accommodate the child's growing independence. Using reason and engaging in joint decision-making whenever possible may be the most effective approach (Berk, 2007).

Family Tasks

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 and self efficacy
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?

Additional Resources

Included below are some resources if you or anyone you know could use some extra support in raising kids! These are low cost or no cost resources!

<https://www.nationalparenthelpline.org/what-we-do>

<https://www.pbs.org/wnet/cryforhelp/featured/resources-hotlines-and-web-sites-for-parents/8/>

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7: Adolescence

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7.1: Adolescence - What Will You Learn?

After reading "Adolescence" you should be able to:

1. Summarize physical growth and development during adolescence.
2. Describe cognitive milestones during adolescence.
3. Explain why adolescence is a period of heightened risk-taking.
4. Explain social development and social changes during adolescence.
5. Describe identity formation during adolescence.
6. Explain the role that aggression, anxiety, and depression play in adolescent development.
7. Describe diversity in adolescent development.



Figure 7.1.1 Hanging out with like-minded friends is a common activity for teens. (Unsplash license; [Parker Gibbons](#) via [Unsplash](#))

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7.2: Physical Development in Adolescence

Adolescence is a period that begins with puberty and ends with the transition to adulthood (approximately ages 10–20). Physical changes associated with puberty are triggered by hormones. Cognitive changes include improvements in complex and abstract thought, as well as development that happens at different rates in distinct parts of the brain and increases adolescents' propensity for risky behavior because increases in sensation-seeking and reward motivation precede increases in cognitive control. Adolescents' relationships with parents go through a period of redefinition in which adolescents become more autonomous, and aspects of parenting, such as distal monitoring and psychological control, become more salient. Peer relationships are important sources of support and companionship during adolescence yet can also promote problem behaviors. Same-sex peer groups evolve into mixed-sex peer groups, and adolescents' romantic relationships tend to emerge from these groups. Identity formation occurs as adolescents explore and commit to different roles and ideological positions. Nationality, gender, ethnicity, socioeconomic status, religious background, sexual orientation, and genetic factors shape how adolescents behave and how others respond to them, and are sources of diversity in adolescence.

Adolescence Defined

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 9–10 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, occurring from approximately ages 18 to 29 (Arnett, 2000).

Adolescence begins with puberty. While the sequence of physical changes in puberty is predictable, the onset and pace of puberty vary widely. Several physical changes occur during puberty, such as adrenarche and gonadarche, the maturing of the adrenal glands and sex glands, respectively. Also during this time, primary and secondary sexual characteristics develop and mature. Primary sexual characteristics are organs specifically needed for reproduction, like the uterus and ovaries in females and testes in males. Secondary sexual characteristics are physical signs of sexual maturation that do not directly involve sex organs, such as development of breasts and hips in girls, and development of facial hair and a deepened voice in boys. Girls experience menarche, the beginning of menstrual periods, usually around 12–13 years old, and boys experience spermarche, the first ejaculation, around 13–14 years old.

During puberty, both sexes experience a rapid increase in height (i.e., growth spurt). For girls this begins between 8 and 13 years old, with adult height reached between 10 and 16 years old. Boys begin their growth spurt slightly later, usually between 10 and 16 years old, 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 height.

Because rates of physical development vary so widely among teenagers, puberty can be a source of pride or embarrassment. 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). 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 a higher risk for depression, substance abuse, and eating disorders (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).

The adolescent brain also remains under development. Up until puberty, brain cells continue to bloom in the frontal region. Adolescents engage in increased risk-taking behaviors and emotional outbursts possibly because the frontal lobes of their brains are

still developing. 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).

Puberty

Puberty is the period during which humans become sexually mature. Besides maturation of the primary sex organs (those involved directly in reproduction), secondary sex characteristics also emerge during puberty. Boys develop adult male traits (such as facial hair), and girls develop adult female traits (such as breasts). In addition, there is a period of rapid body growth during puberty, which results in sexual dimorphism in adult body size, composition, and shape.

When does puberty occur? The timing of puberty depends in part on gender, with puberty typically occurring earlier in girls than boys. Besides gender, the timing of puberty is influenced by genetic and environmental factors. Although there is considerable individual variation in the age of onset, duration, and tempo of the physical changes of puberty, the sequence of these changes is relatively consistent among individuals.

Hormonal Control of Puberty

In both boys and girls, the changes of puberty are triggered by the hypothalamus in the brain. For unknown reasons, the hypothalamus starts releasing pulses of gonadotropin-releasing hormone (GnRH). This hormone travels directly to the anterior pituitary gland and stimulates it to secrete hormones that target the gonads (testes in males and ovaries in females). The main pituitary hormones are follicle-stimulating hormone (FSH) and luteinizing hormone (LH). FSH stimulates the testes to produce sperm and follicles in the ovaries to mature and secrete estrogen. LH stimulates the testes to secrete testosterone and the ovaries to secrete estrogen. Testosterone and estrogen (primarily estradiol, a form of estrogen), in turn, stimulate the development of primary and secondary sex characteristics and contribute to the spurt in physical growth. It should be noted that both sexes have both hormones. It is the balance of the hormones that determines which characteristics develop, more estrogen/estradiol leading to the development of female and more testosterone leading to male. Both hormones play important roles for both sexes.

Puberty in Males

In the United States, puberty in boys generally begins between the ages of 11 and 12 years and is usually over by the age of 18. During puberty, the testes and scrotum start to increase in size first, followed by the penis. At the same time that the penis is growing, the seminal vesicles, prostate, and bulbourethral glands are also growing and developing. Secondary sex characteristics, such as pubic hair, also develop. Additional physical changes that occur in boys during puberty include the appearance of facial and body hair and deepening of the voice as the vocal cords increase in size. The first ejaculation generally occurs by the age of 13 years. Even this early in puberty, the semen may contain some sperm. Although full fertility may not be gained for another year or two, boys are generally fertile before they have completed their adolescent growth and achieved an adult appearance.

Puberty in Females

Puberty in females typically begins a couple of years earlier than puberty in males. In the United States, girls begin puberty between the ages of nine and ten. Visible, external changes begin first, including the growth and development of the breasts and pubic hair. About two years after breast development begins, the internal reproductive organs — including the uterus and vagina — start to grow and develop.

One of the most significant changes in females during puberty is menarche, which is the first menstrual period. It marks the beginning of menstruation. In the United States, menarche occurs at an average age of 12.4 years. However, there is considerable variation in this age, with menarche at any age between eight and 16 considered normal. It generally takes a few years after menarche occurs before ovulation starts occurring regularly and a girl becomes fertile, although occasionally, ovulation starts earlier. Unlike males, most females attain their adult size and appearance before they can reproduce.

Adolescent Growth Spurt

The period of rapid growth in body size that occurs during puberty is called the **adolescent growth spurt (AGS)**. Both height and weight increase at a rate that is faster than at any time since early childhood. There are also significant changes in body composition and body proportions. The adolescent growth spurt is controlled by hormones, including growth, thyroid, and sex hormones.

Growth in Height

The average boy and girl do not differ significantly from each other in growth rate before the AGS begins. However, by the time they have attained their final adult height, the average female is about 13 cm (5.1 in.) shorter than the average male. One reason is that the AGS occurs earlier in girls than in boys, so girls experience a shorter period of childhood growth, making them shorter, on average, when they begin the AGS in height. Another reason is that the peak height velocity (maximum rate of growth in height) is lower for the average girl than it is for the average boy.

In boys, the AGS in height usually starts by about the age of 11 years. The peak height velocity in boys occurs at about age 13.5 when growth in height is about 10.3 cm (4 in.) per year on average. Growth in height in boys ceases by about age 18 (or a bit later) when the ends of the long bones finally ossify at the epiphyses, so additional growth in height is no longer possible.

In girls, the AGS in height usually starts by the age of roughly 9.5 years. The peak height velocity in girls occurs at about age 11.5 years when growth in height is about 9 cm (3.5 in.) per year on average. Growth in height in girls is completed by about 16 years (if not earlier) when the closure of the epiphyses prevents any additional growth in height.

The accelerated rate of growth during the AGS happens at different times for various parts of the body, but it occurs in the same predictable sequence for both sexes. Generally, the extremities — including the head, hands, and feet — experience rapid growth first, followed by the arms and legs, and then by the trunk and shoulders. This non-uniform growth may make the adolescent body seem awkward and disproportionate until growth is completed.

Growth in Weight

Growth in weight shows a similar spurt during adolescence as growth in height. Growth in weight occurs partly because of the growth in height, but growth in muscle, bone, and (for girls especially) body fat also contributes to the growth in weight. In boys, the AGS in weight lags behind the AGS in height by about three months, whereas in girls the lag time is about six months.

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7.3: Cognitive Development in Adolescence

Just a few decades ago, people thought that the human brain was complete in its development by about age 5. While those early years matter, we are far from done until much later. Today, we know that the brain is still not fully mature into at least the early twenties. And it is that most important part of the brain for planning and impulse control, the frontal lobe, that is not fully developed. This abstract from a 2008 article titled "The adolescent brain" provides a summary of a number of aspects of the adolescent.

Adolescence is a developmental period characterized by suboptimal decisions and actions that give rise to an increased incidence of unintentional injuries and violence, alcohol and drug abuse, unintended pregnancy and sexually transmitted diseases. Traditional neurobiological and cognitive explanations for adolescent behavior have failed to account for the nonlinear changes in behavior observed during adolescence, relative to childhood and adulthood. This review provides a biologically plausible conceptualization of the neural mechanisms underlying these nonlinear changes in behavior, as a heightened responsiveness to incentives while impulse control is still relatively immature during this period. Recent human imaging and animal studies provide a biological basis for this view, suggesting differential development of limbic reward systems relative to top-down control systems during adolescence relative to childhood and adulthood. This developmental pattern may be exacerbated in those adolescents with a predisposition toward risk-taking, increasing the risk for poor outcomes.

That's a long way of saying that teens have poor impulse control at a time when impulses are at an all-time high. The frontal lobe that enables us to control our emotions and plan - thinking before we act - is not fully mature. At the same time, the "limbic reward system" that makes pleasurable experiences pleasurable exhibits "heightened responsiveness".

During adolescence, teenagers move beyond concrete thinking and become capable of abstract thought (we hope!). Recall that Piaget refers to this stage as formal operational thought. Teen thinking is also characterized by the ability to consider multiple points of view, imagine hypothetical situations, debate ideas and opinions (e.g., politics, religion, and justice), and form new ideas. In addition, it's not uncommon for adolescents to question authority or challenge established societal norms.

Cognitive changes include improvements in complex and abstract thought, as well as development that happens at different rates in distinct parts of the brain and increases adolescents' propensity for what we may call "risky behavior" because increases in the brain's *sensation-seeking* and *reward motivation* is stronger right now than the cognitive control of the pre-frontal cortex. The pre-frontal cortex does not fully develop until around age 25. So, you can see why the way an adolescent FEELS in any given situation could lead to the impulse to override the cognitive control center of the brain. This is one of the reasons it is so important for parents, caregivers, teachers and other mentors to maintain a supportive and close relationship with the adolescents in their lives to the best of their ability. This can be a bit tricky at times though! Adolescents' relationships with parents, caregivers, teachers and other mentors go through a period of redefinition in which adolescents become more autonomous, and aspects of parenting/caregiving, such as distal monitoring and psychological control, become more prominent. Peer relationships at this stage are important sources of support but can also promote problem behaviors. As we know by now, "it depends" though. We will explore that more in this chapter. The same-sex peer groups that young children tend to favor, evolve into mixed-sex peer groups at this stage, and adolescents' intimate relationships tend to emerge from these groups. *Identity formation* occurs as adolescents explore and commit to different roles and ideological positions. Nationality, gender identity, ethnicity, socioeconomic status, religious or spiritual background, sexual orientation, genetic factors, access (or not) to resources, personal disposition, and support (or lack of) from parents/caregivers and mentors all shape how adolescents behave and how others respond to them, and are sources of much diversity in adolescence.

Piaget's Formal Operational Stage of Cognitive Development

During the formal operational stage, adolescents are able to understand abstract principles *which have no physical reference*. They can now contemplate such abstract constructs as love, freedom, beauty 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 are able to think about all the possibilities in a situation beforehand, and then test them systematically (Crain, 2005). Now they are able to engage in true 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 are able to answer the question correctly as they understand the transitivity involved.

Does everyone reach formal operations?

According to Piaget, most people attain some degree of formal operational thinking, but use formal operations primarily in the areas of their strongest interest (Crain, 2005). Other researchers, have concluded that the achievement of formal operational thinking is not universal and that environmental factors make it more - or less - likely to develop. In other words, nurture plays a role in what we do and do not achieve. In fact, most adults do not regularly demonstrate formal operational thought, and in 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.

Limitations in Adolescent Thinking

Adolescent Egocentrism

Once adolescents can understand abstract thoughts, they enter a world of hypothetical possibilities and demonstrate *egocentrism* (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 regarding death. As a general, adolescents are at a higher probability to engage in risky behaviors, such as drinking and driving or unprotected sex activity, 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).

Dualistic Thinking

Another limit to thinking we see in adolescence is what is called "dualistic" thinking. This is viewing the world in terms of either/or - seeing everything as black and white, with no opportunity for gray. In other words, your mom is either good or evil - there's no in-between.

More on 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* (thinking about one's thoughts and feelings). They begin to imagine how the world could be which leads them to become *idealistic* or insisting 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 are able to recognize what others expect of them, they will conform to those expectations but their emotions and behavior seem hypocritical to themselves and this is something to navigate in this stage.

Information Processing

Cognitive Control

As noted in earlier chapters, 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 propose specific conclusions. Deductive reasoning guarantees a truthful conclusion if the premises on which it is based are accurate.

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). The first one, *Intuitive thought*, is automatic, unconscious, and fast (Kahneman, 2011), and it is more experiential and emotional. The other one, *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.

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7.4: Psychosocial Development in Adolescence

Erikson: Identity vs. Role Confusion

Erikson believed that the primary psychosocial task of adolescence was establishing an identity. Teens struggle with the question “Who am I?” This 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. Those who are unsuccessful at resolving this stage may either withdraw further into social isolation or become “lost in the crowd,” as the saying goes. However, more recent research, suggests that few leave this age period with identity achievement, and that most identity formation occurs during young adulthood (Côté, 2006).

Identity Statuses

Expanding on Erikson’s theory, James Marcia (2010) identified **four identity statuses** that represent the four possible combinations of the dimensions of commitment and exploration (see Table below).

Commitment to an Identity	Exploration		
		Absent	Present
	Absent	Identity Diffusion	Identity Moratorium
	Present	Identity Foreclosure	Identity Achievement

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. Those who persist in this identity may drift aimlessly with little connection to those around them or have little sense of purpose in life.

Those in **identity foreclosure** have made a commitment to an identity without having explored the options. Some parents/caregivers 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/caregivers and others in their life and wish to follow in their footsteps.

Identity moratorium is a status that describes those who are actively exploring in an attempt to establish an identity, but have yet to have made any commitment. This can be an anxious and emotionally tense time period as the adolescent experiments with different roles and explores various beliefs. Nothing is certain and there are many questions, but few answers.

Identity achievement refers to those who, after exploration, have made a commitment. This is a long process and is not often achieved by the end of adolescence.

During high school and the college years, teens and young adults generally move from identity diffusion and foreclosure toward moratorium and achievement. The biggest gains in the development of identity appear to be in college, as college students are exposed to a greater variety of career choices, lifestyles, and beliefs. However, not everyone has access to resources that help them attend college and many people seem to be finding diverse exposure elsewhere such as community activism and online forums. This 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).

Areas of Identity Development

Developmental psychologists have researched several different areas of identity development and it will be interesting to see how these change or stay the same over time.

Some of the main areas include:

- **Religious/spiritual identity:** The religious/spiritual views of teens are often similar to that of their families (Kim- Spoon, Longo, & McCullough, 2012). Most teens may question specific customs, practices, or ideas in the faith of their parents/caregivers, but few completely reject the religion of their families.
- **Political identity:** The political ideology of teens is also influenced by their parents/caregivers 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, but view themselves as more of an “independent”. Their teenage children are often following suit or become more apolitical (Côté, 2006).
- **Vocational identity:** 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. Vocational 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. In addition, many of the jobs held by teens are not in occupations that most teens will seek as adults.
- **Gender identity:** This is also becoming an increasingly prolonged task as attitudes and views regarding gender keep changing. The roles deemed appropriate for people are evolving (Sinclair & Carlsson, 2013).
- **Ethnic and cultural identity:** “The task of ethnic identity formation involves sorting out and resolving positive and negative feelings and attitudes about one’s own ethnic group and about other groups and identifying one’s place in relation to both” (Phinney, 2006). When groups differ in status in a culture, those from the non- dominant group have to be cognizant of the customs and values of those from the dominant culture. This makes ethnic identity less salient for members of the dominant culture. According to the U.S. Census (2012) more than 40% of Americans under the age of 18 are from ethnic minorities. For many ethnic minority teens, discovering one’s ethnic identity is an important part of identity formation.

Impact of Identity Development

Adolescents continue to refine their sense of self as they relate to others. 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?” Some adolescents adopt the values and roles that their parents/caregivers expect for them. Other teens develop identities that are in opposition to their parents/caregivers but align with a peer group. This is common as peer relationships become a central focus in adolescents’ lives.

As adolescents work to form their identities, they tend to pull away from their parents/caregivers, and the peer group becomes very important (Shanahan, McHale, Osgood, & Crouter, 2007). Despite spending less time with their parents/caregivers, the current majority of teens report mostly positive feelings toward them (Moore, Guzman, Hair, Lippman, & Garrett, 2004). Warm and healthy parent/caregiver-child relationships have been associated with positive child outcomes, such as better academic strides and fewer behavior challenges in school, in the United States as well as in other countries (Hair et al., 2005).

It appears that most teens *don’t* actually 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/caregivers, 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 types of arguments tend to decrease as teens develop (Galambos & Almeida, 1992). These finding remain pretty current even today and it will be interesting to see where the research reveals more in future studies.

Parents/Caregivers

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/caregiver–child relationships. As adolescents strive for more independence and autonomy during this time, different aspects of parenting/caregiving become more salient. For example, parents/caregivers distal supervision and monitoring become more important as adolescents spend more time away from them and in the presence of peers. Parental/caregiver monitoring encompasses a wide range of behaviors such as attempts to set rules and know their adolescents’ friends, activities, and whereabouts, in addition to adolescents’ willingness to disclose information to them (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 (Barber, 1996), is another aspect of parenting/caregiving that becomes more noticeable during adolescence and is related to more problematic adolescent adjustment.

Peers



Figure 7.4.1 Peer relationships are a big part of adolescent development. The influence of peers can be both positive and negative as adolescents experiment together with identity formation and new experiences. (Unsplash license; Zachary Nelson via Unsplash)

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 (the tendency for people to have ties with those who are similar to themselves in socially significant ways). One of the most widely studied aspects of adolescent peer influence is known as **deviant peer contagion** (Dishion & Tipsord, 2011), which 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.

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 family. However, peers also serve as an important 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 have conflictual peer relationships.

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 "nerds") and are often linked with adolescents' social status and peers' perceptions of their values or behaviors.

Romantic/Intimate Relationships

Adolescence is the developmental period during which romantic relationships typically first emerge. By the end of adolescence, most American teens have had at least one romantic/intimate relationship (Dolgin, 2011). However, culture does play a role. Dating serves many purposes for teens, including having fun, companionship, status, socialization, sexual experimentation, intimacy, and partner selection for those in late adolescence (Dolgin, 2011).

There are several stages in the dating process beginning with engaging in mixed-sex group activities in early adolescence (Dolgin, 2011). The same-sex peer groups that were common during childhood expand into mixed-sex peer groups that are more characteristic of adolescence. Romantic/intimate relationships often form in the context of these mixed-sex peer groups (Connolly, Furman, & Konarski, 2000). Interacting in mixed-sex groups is easier for teens as they are among a supportive group of friends, can observe others interacting, and are kept safe from a too early intimate relationship. By middle adolescence teens are often engaging in brief, casual dating or in group dating with established couples (Dolgin, 2011). Then, in late adolescence, dating involves exclusive, intense relationships. These relationships tend to be long-lasting and continue for a year or longer, however, they may also interfere with friendships.

Although romantic/intimate 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/intimate relationships, and their positive and negative emotions are more tied to romantic/intimate relationships, or lack thereof, than to friendships, family relationships, or school (Furman & Shaffer, 2003). These relationships contribute to adolescents' identity formation, changes in family and peer relationships, and emotional and behavioral adjustment. Furthermore, these relationships are centrally connected to adolescents' emerging sexuality. Parents/caregivers, policymakers, and researchers have devoted a great deal of attention to

adolescents' sexuality, in large part because of concerns related to sexual activity and safe contraception. However, sexuality involves more than this narrow focus. For example, adolescence is often when individuals who are lesbian, gay, bisexual, or transgender come to understand and accept themselves as such (Russell, Clarke, & Clary, 2009). Thus, romantic/intimate relationships are a domain in which adolescents experiment with new behaviors and identities in the search to find the authentic self.

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7.5: Emotion, Achievement, and Sleep

Aggression and antisocial behavior

Several major theories of the development of antisocial behavior treat adolescence as an important period. 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/caregiver monitoring and supervision, aspects of parenting/caregiving that become more salient during adolescence. Poor monitoring and lack of supervision contribute to increasing involvement with peers who promote adolescents' own maladaptive behavior. Late starters desist from this type of behavior when changes in the environment make other options more appealing. Similarly, Moffitt's (1993) life-course persistent versus adolescent-limited model distinguishes between maladaptive behavior that begins in childhood versus adolescence. Moffitt regards this 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 this type of behavior, leading to desistance in such.

Anxiety and depression

Developmental models of anxiety and depression also treat adolescence as an important period, especially in terms of the ever present binary of gender differences in prevalence rates that persist through adulthood (Rudolph, 2009). Starting in early adolescence, compared with male identified individuals, female identified individuals have rates of anxiety that are about twice as high and rates of depression that are 1.5 to 3 times as high (American Psychiatric Association, 2013). 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 specific phobias are about 5% in children and 3%–5% in adults but 16% in adolescents. Anxiety and depression are particularly concerning because suicide is one of the leading causes of death during adolescence. 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/caregiver 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 female identified individuals compared with male identified individuals because female identified individuals have been more socialized towards 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.

The importance of having help readily available to you when you are depressed and, potentially, suicidal is so important that that help is readily available to anyone in need. If you're thinking about suicide, are worried about a friend or loved one, or would like emotional support, the Lifeline network is available 24/7 across the United States.

The Lifeline is available for everyone, is free, and confidential.

[National Suicide Prevention Lifeline](#)

1-800-273-8255

[Nacional de Prevención del Suicidio](#)

1-888-628-9454

Available 24 hours everyday

Academic achievement

Adolescents spend more waking time in school than in any other context (Eccles & Roeser, 2011). Academic achievement during adolescence is predicted by interpersonal (e.g., parental/caregiver 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, at least in Western cultures, currently. 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.

Adolescent Sleep

Adolescents need more sleep! 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, it 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. According to the National Sleep Foundation (NSF) (2016), adolescents need a *minimum* of 8 hours up to 10 hours of sleep each night to function best. On average, adolescents only receive 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 the 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 that can lead to a "crash" feeling later (NSF, 2016). Additionally, they are more at risk for substance abuse, car crashes, poor academic performance, obesity, and a weakened immune system (Weintraub, 2016).

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 better reflect the sleep research. However, the logistics of changing start times and bus schedules are proving too difficult for some schools leaving many adolescent vulnerable to the negative consequences of sleep deprivation.

Different Paths

Adolescent development does not necessarily follow the same pathway for all individuals. Certain features of adolescence, particularly with respect to biological changes associated with puberty and cognitive changes associated with brain development, are relatively universal. But other features of adolescence depend largely on circumstances that are more environmentally variable. For example, adolescents growing up in one country might have different opportunities for risk taking than adolescents in a different country, and supports and sanctions for different behaviors in adolescence depend on laws and values that might be specific to where adolescents live. Likewise, different cultural norms regarding family and peer relationships shape adolescents' experiences in these domains. For example, in some countries, adolescents' parents/caregivers are expected to retain control over major decisions, whereas in other countries, adolescents are expected to begin sharing in or taking control of decision making.

Even within the same country, adolescents' gender, ethnicity, immigrant status, religion, sexual orientation, socioeconomic status, and personality can shape both how adolescents behave and how others respond to them, creating diverse developmental contexts for different adolescents. For example, early puberty (that occurs before most other peers have experienced puberty) appears to be associated with worse outcomes for female identified individuals than male identified individuals, likely in part because female identified individuals who enter puberty early tend to associate with older males, which in turn is associated with early sexual behavior and substance use. For adolescents who are ethnic or sexual minorities, discrimination sometimes presents a bigger set of challenges that non-minorities do not typically face.

Finally, genetic variations contribute an additional source of diversity in adolescence. Current approaches emphasize gene X environment interactions, which often follow a differential susceptibility model (Belsky & Pluess, 2009). That is, particular genetic variations are considered riskier than others, but genetic variations also can make adolescents more or less susceptible to environmental factors. For example, the association between the CHRM2 genotype and adolescent externalizing behavior (aggression and delinquency) has been found in adolescents whose parents/caregivers are low in monitoring behaviors (Dick et al., 2011). Thus, it is important to bear in mind that individual differences play an important role in adolescent development.

Conclusions

Adolescent development is characterized by biological, cognitive, and social changes. Social changes are particularly notable as adolescents become more autonomous from their parents/caregivers, spend more time with peers, and begin exploring romantic/intimate relationships and sexuality. Adjustment during adolescence is reflected in identity formation, which often involves a period of exploration followed by commitments to particular identities. Adolescence is characterized by risky behavior, which is made more likely by changes in the brain in which reward-processing centers develop more rapidly than cognitive control systems, making adolescents more sensitive to rewards than to possible negative consequences. Despite these generalizations, factors such as country of residence, gender, ethnicity, and sexual orientation shape development in ways that lead to diversity of experiences across adolescence.

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CHAPTER OVERVIEW

8: Emerging Adulthood/Early Adulthood

8.1: Emerging/Early Adulthood - What Will You Learn?

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8.1: Emerging/Early Adulthood - What Will You Learn?

After reading "Emerging/Early Adulthood" you should be able to:

1. Discuss the developmental tasks of early adulthood.
 2. Distinguish between formal and postformal thought.
 3. Explain dialectical thought.
 4. Describe Erikson's stage of intimacy vs. isolation.
 5. Question Erikson's assertion about the focus on intimacy in early adulthood.
 6. Identify trends in mate selection, marriage choices, and cohabitation in the United States.
 7. Apply Sternberg's theory of love to specific examples of relationships.
 8. Apply Lee's love styles to specific examples of relationships.
 9. Compare frames of relationships.
 10. Explain the wheel theory of love.
 11. Identify Adult Attachment styles.
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8.2: Emerging Adulthood

The idea of "emerging adulthood" is a somewhat new concept. Historically, the period of the lifespan just after adolescence was called "early adulthood" and spanned from approximately age 18 (the end of adolescence) all the way until age 40 to 45 (beginning of middle adulthood). More recently, developmentalists have divided this age period into two separate stages: Emerging adulthood (think 18 to 25ish) followed by early adulthood (think 26ish to 45). Although these age periods differ in their physical, cognitive, and social development, overall the age period from age 18 to age 45 is a time of peak physical capabilities and the emergence of more mature cognitive development, financial independence, and intimate relationships.

Emerging adulthood is found mainly in "developed" countries, where most young people obtain tertiary education (any type of education pursued beyond the high school level) and median ages of entering marriage and parenthood (if pursued) are around 30. There are variations in emerging adulthood within developed countries. It lasts longest in Europe, and in Asian developed countries, the self-focused freedom of emerging adulthood is balanced by obligations to parents/caregivers and family and views of sexuality. In developing countries, although today emerging adulthood exists mostly among the middle-class and the more elite, it can be expected to grow in the 21st century as these countries become more affluent.

According to Rankin and Kenyon (2008), historically the process of becoming an adult was more clearly marked by rites of passage. For many individuals, partnering and becoming a parent/caregiver were considered entry into adulthood. However, these role transitions are no longer considered as the important markers of adulthood (Arnett, 2001). Economic and social changes have resulted in an increase in young adults attending college (Rankin & Kenyon, 2008) and a delay in marriage, if at all (compared to previous generations) and having children. Consequently, financial independence and accepting responsibility for oneself are important markers of adulthood in Western culture across age (Arnett, 2001) and culturally diverse groups (Arnett, 2004).



Figure 8.2.1: Many are delaying - or passing - on the rites of passage that once signified becoming an adult. (Unsplash license; Kelly Sikkema via Unsplash)

Emerging Adulthood Defined

Emerging adulthood is the period between the late teens and early twenties; ages 18-25, although some researchers have included up to age 29 in the definition (Society for the Study of Emerging Adulthood, 2016). Jeffrey Arnett (2000) argues that emerging adulthood is neither adolescence nor is it young adulthood. Individuals in this age period have left behind the relative dependency of childhood and adolescence, but have not yet taken on the full responsibilities of adulthood. "Emerging adulthood is a time of life when many different directions remain possible, when little about the future is decided for certain, when the scope of independent exploration of life's possibilities is greater for most people than it will be at any other period of the life course" (Arnett, 2000).

Emerging adulthood has been proposed as a new life stage between adolescence and young adulthood, lasting roughly from ages 18 to 25. Arnett has identified five characteristics of emerging adulthood that distinguishes it from adolescence and young adulthood (Arnett, 2006). These are:

- identity explorations
- instability
- self-focus
- feeling in-between adolescence and adulthood
- a sense of broad possibilities for the future



Figure 8.2.2: Fewer people are marrying today - and those that are are doing so later - skipping or delaying a historical marker of adulthood. (Unsplash license; [Pablo Heimplatz](#) via [Unsplash](#))

The Five Characteristics of Emerging Adulthood

Identity Exploration

It is the **age of identity exploration**. Even Erik Erikson commented on a trend during the 20th century of a “prolonged adolescence” in industrialized societies. Today, most identity development occurs during the late teens and early twenties rather than adolescence. It is during emerging adulthood that people are exploring their career choices and ideas about intimate relationships, setting the foundation for adulthood.

Instability

Arnett also described this time period as the **age of instability** (Arnett, 2000; Arnett, 2006). Exploration generates uncertainty and emerging adults change jobs, relationships, and residences more frequently than other age groups.

Self Focus

This is also the **age of self-focus**. Being self-focused is not the same as being “self-centered.” Adolescents are more self-centered than emerging adults. Arnett reports that in his research, he found emerging adults to be very considerate of the feelings of others, especially their parents/caregivers. Nonetheless, emerging adults focus more on themselves, as they realize that they have few obligations to others and that this is the time where they can do what they want with their life.

Feeling In-Between

This is also the **age of feeling in-between**. When asked if they feel like adults, more 18 to 25 year-olds answer “yes and no” than do teens or adults over the age of 25 (Arnett, 2001). They no longer feel as dependent as they did as teenagers. Yet, they may still be financially dependent on their parents/caregivers to some degree, and they have not completely attained some of the indicators of adulthood, such as finishing their education, obtaining a satisfying full-time job, being in a committed relationship, or being responsible for others. It is not surprising that Arnett found that 60% of 18 to 25 year-olds felt that in some ways they were adults, but in some ways they were not (Arnett, 2001).

Age of Possibilities

Emerging adulthood is the **age of possibilities**. It is a time period of optimism as more 18 to 25 year-olds feel that they will someday get to where they want to be in life. Arnett (2000, 2006) suggests that this optimism is because these dreams have yet to be tested. For example, it is easier to believe that you will eventually find your soul mate when you have yet to have had a serious relationship. It may also be a chance to change directions, for those whose lives, up to this point, have been difficult. The experiences of children and teens are influenced by the choices and decisions of their parents/caregivers. If the parents/caregivers are dysfunctional, there is little a child can do about it. In emerging adulthood, people can move out and move on. They have the chance to transform their lives and move away from unhealthy environments. Even those whose lives were happier and more fulfilling as children, now have the opportunity in emerging adulthood to become independent and make decisions about the direction they would like their life to take.

Why Emerging Adulthood?

The theory of emerging adulthood proposes that a new life stage has arisen between adolescence and young adulthood over the past half-century in industrialized countries. Fifty years ago, most young people in these countries had entered stable adult roles in love and work by their late teens or early twenties. Relatively few people pursued education or training beyond secondary school, and, consequently, most young male identified individuals were full-time workers by the end of their teens. Relatively few female identified individuals worked in occupations outside the home, and the median marriage age for women in the United States and in most other industrialized countries in 1960 was around 20 (Arnett & Taber, 1994; Douglass, 2005). The median marriage age for men was around 22, and married couples usually had their first child about one year after their wedding day. All told, for most young people half a century ago, their teenage adolescence led quickly and directly to stable adult roles in love and work by their late teens or early twenties. These roles would form the structure of their adult lives for decades to come.

Now all that has changed. A higher proportion of young people than ever before—about 70% in the United States—pursue education and training beyond high school (National Center for Education Statistics, 2012). The early twenties are not a time of entering stable adult work but a time of immense job instability: In the United States, the average number of job changes from ages 20 to 29 is seven. The average age of a first marriage, according to the U.S. Census Bureau (2017): for women in 2017 was **27.4 years**. For men, it's slightly older at **29.5 years**. Consequently, a new stage of the life span, emerging adulthood, has been created, lasting from the late teens through the mid-twenties, roughly ages 18 to 25.

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8.3: Physical Development in Emerging/Early Adulthood



Figure 8.3.1 (Unsplash license; [John Arano](#) via [Unsplash](#))

The Physiological Peak

People in their twenties and thirties are considered young adults. If you are in your early twenties, good news - you are probably at the peak of your physiological development. Your reproductive system, motor ability, strength, and lung capacity are operating at their best. Now here is the bad news. These systems will now start a slow, gradual decline so that by the time you reach your mid to late 30s, you will begin to notice signs of aging. This includes a decline in your immune system, your response time, and in your ability to recover quickly from physical exertion. For example, you may have noticed that it takes you quite some time to stop panting after running to class or taking the stairs. But, here is more good news. Getting out of shape is not an inevitable part of aging; it is probably due to the fact that you have become less physically active and have experienced greater stress. How is that good news, you ask? It's good news because it means that there are things you can do to combat many of these changes. So keep in mind, as we continue to discuss the life span that many of the changes we associate with aging can be turned around if we adopt healthier lifestyles.

A Healthy, but Risky Time

Doctor's visits are less frequent in early adulthood than for those in midlife and late adulthood and are necessitated primarily by injury and pregnancy (Berger, 2005). However, among the top five causes of death in young adulthood are non-intentional injury (including motor vehicle accidents), homicide, and suicide (Heron, M. P. & B. L. Smith, 2007). Cancer and heart disease complete the list. Rates of violent death (homicide, suicide, and accidents) are highest among young adult males, and vary among by race and ethnicity. Rates of violent death are higher in the United States than in Canada, Mexico, Japan, and other selected countries. Males are 3 times more likely to die in auto accidents than are females (Frieden, 2011).

Substance Abuse

Rates of violent death are influenced by substance abuse which peaks during early adulthood. Illicit drug use peaks between the ages of 19 and 22 and then begins to decline (Berk, 2007). And twenty-five percent of those who smoke cigarettes, a third of those who smoke marijuana, and 70 percent of those who abuse cocaine began using after age 17 (Volkow, 2004). Some young adults engage in substance use as a way of coping with stressors from family, personal relationships, or concerns over being on one's own. Others do so because they have friends who use and in the early 20s, there is still a good deal of pressure to conform. Half of all alcohol consumed in the United States is in the form of binge drinking (Frieden, 2011).

Drugs impair judgment, reduce inhibitions, and alter mood, all of which can lead to dangerous behavior. Reckless driving, violent altercations, and forced sexual encounters are some examples. Binge drinking on college campuses has received considerable media and public attention. The role alcohol plays in predicting acquaintance rape on college campuses is of particular concern. In the majority of cases of rape, the victim knows the rapist. Being intoxicated increases a female's risk of being the victim of date or acquaintance rape (Fisher et al. in Carroll, 2007). And, she is more likely to blame herself and to be blamed by others if she was intoxicated when raped. Males increase their risk of being accused of rape if they are drunk when an incidence occurred (Carroll, 2007).

The use of alcohol and other drugs is also associated with an increase in the risk of sexually transmitted infections because people are more likely to engage in risky sexual behavior when under the influence. This includes having sex with someone who has had

multiple partners, having sex without the use of a condom, having multiple partners, or having sex with someone whose history is unknown. The use of alcohol and other drugs during pregnancy may also have a teratogenic effect.

Sexual Responsiveness and Reproduction in Early Adulthood

Sexual Responsiveness

Men and women tend to reach their peak of sexual responsiveness at different ages. For men, sexual responsiveness tends to peak in the late teens and early twenties. Sexual arousal can easily occur in response to physical stimulation or fantasizing. Sexual responsiveness begins a slow decline in the late twenties and into the thirties although a man may continue to be sexually active. Through time, a man may require more intense stimulation in order to become aroused. Women often find that they become more sexually responsive throughout their 20s and 30s and may peak in the late 30s or early 40s. This is likely due to greater self-confidence and reduced inhibitions about sexuality.

Reproduction

For many couples, early adulthood is the time for having children. However, delaying childbearing until the late 20s or early 30s has become more common in the United States.

Couples delay childbearing for a number of reasons. Women are more likely to attend college and begin careers before starting families. And both men and women are delaying marriage until they are in their late 20s and early 30s.

Infertility

Infertility is defined as not being able to get pregnant after one year (or longer) of unprotected sex (sex without the use of contraceptives). Among women of reproductive age (15 - 49), 8.8% of married women are infertile and 12.7% of all women in this age range have received fertility services ([National Survey of Family Growth 2015 - 2017](#), CDC). Male factors contribute to infertility in about a third of the cases. For men, the most common cause is a lack of sperm production or low sperm production. Female factors cause infertility in another third of cases. For women, one of the most common causes of infertility is the failure to ovulate. Another cause of infertility is pelvic inflammatory disease, an infection of the female genital tract (Carroll, 2007). Pelvic inflammatory disease is experienced by 1 out of 7 women in the United States and leads to infertility about 20 percent of the time. One of the major causes of pelvic inflammatory disease is Chlamydia trachomatis, the most commonly diagnosed sexually transmitted infection in young women. Another cause of pelvic inflammatory disease is gonorrhea. Both male and female factors contribute to the remainder of cases of infertility. While estimates of the incidence of infertility vary based on the source and type of data consulted, it is quite clear that infertility is quite common and appears to affect at least 10% of the population in the United States.

While women have more potential sources of infertility than men (as they need functioning [ovaries](#), [fallopian tubes](#), and a [uterus](#) to get pregnant), it is in no way a "woman's condition". The [CDC summarizes the data](#) as follows:

Many couples struggle with infertility and seek help to become pregnant, but it is often thought of as only a woman's condition. However, in about 35% of couples with infertility, a male factor is identified along with a female factor. In about 8% of couples with infertility, a male factor is the only identifiable cause.

Almost 9% of men aged 25 to 44 years in the United States reported that they or their partner saw a doctor for advice, testing, or treatment for infertility during their lifetime.

Fertility Treatment

The majority of infertility cases (85-90 percent) are treated using fertility drugs to increase ovulation or with surgical procedures to repair the reproductive organs or remove scar tissue from the reproductive tract. In vitro fertilization is used to treat infertility in less than 5 percent of cases. IVF is used when a woman has blocked or deformed fallopian tubes or sometimes when a man has a very low sperm count. This procedure involves removing eggs from the female and fertilizing the eggs outside the woman's body. The fertilized egg is then reinserted in the woman's uterus. The average cost of IVF is over \$12,000 and the success rate is between 5 to 30 percent. IVF makes up about 99 percent of artificial reproductive procedures.

Less common procedures include gamete intra-fallopian tube transfer (GIFT) which involves implanting both sperm and ova into the fallopian tube and fertilization is allowed to occur naturally. The success rate of implantation is higher for GIFT than for IVF

(Carroll, 2007). Zygote intra-fallopian tube transfer (ZIFT) is another procedure in which sperm and ova are fertilized outside of the woman's body and the fertilized egg or zygote is then implanted in the fallopian tube. This allows the zygote to travel down the fallopian tube and embed in the lining of the uterus naturally. This procedure also has a higher success rate than IVF.

Insurance coverage for infertility is required in fourteen states, but the amount and type of coverage available varies greatly (ASRM, 2000-2007). The majority of couples seeking treatment for infertility pay much of the cost. Consequently, infertility treatment is much more accessible to couples with higher incomes. However, grants and funding sources are available for lower income couples seeking infertility treatment as well.



Figure 8.3.2 (Unsplash license; [Han Myo Htwe](#) via [Unsplash](#))

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8.4: Cognitive Development in Early Adulthood

Beyond Formal Operational Thought: Postformal Thought

According to Piaget's theory, formal operational thought is generally acquired in adolescence. 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 30's, you would probably find that the 30-something 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).

Dialectical Thought

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 engage in dualistic thinking - they may think in **dichotomies**; ideas are true or false; good or bad; and there is no middle-ground. However, with experience, the adult comes to recognize that there is 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/caregivers who were considered, in a normative and general sense, fantastic or awful by the adolescent eventually become just people with strengths and weaknesses, endearing qualities, and faults to the adult.

Does everyone reach postformal or even formal operational thought?

Formal operational thought involves being able to think abstractly; however, this ability does not apply to all situations or all adults. Formal operational thought is influenced by experience and education. 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.



Figure 8.4.1 (Pexels license; **Christina Morillo** via **Pexels**)

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8.5: Psychosocial Development in Early Adulthood

Many of the developmental tasks of early adulthood involve becoming part of the adult world and gaining independence. Young adults sometimes complain that they are not treated with respect—especially if they are put in positions of authority over older workers. Consequently, young adults may emphasize their age to gain credibility from those who are even slightly younger. “You’re only 23? I’m 27!” a young adult might exclaim.

The focus of early adulthood is often on the future. Many aspects of life are on hold while people go to school, go to work, and prepare for a brighter future. There may be a belief that the hurried life now lived will improve ‘as soon as I finish school’ or ‘as soon as I get promoted’ or ‘as soon as the children get a little older.’ As a result, time may seem to pass rather quickly. The day consists of meeting many demands that these tasks bring. The incentive for working so hard is that it will all result in better future.

Educational Concerns

What is required to do well in today’s economy? Among emerging adults, current concerns about acquiring education, is the relationship between higher education and the workplace. Bok (2005), American educator and Harvard University President, calls for a closer alignment between the goals of educators and the demands of the economy. Many companies outsource much of their work, not only to save costs, but to find workers with the skills they need. Colleges and universities, he argues, need to promote global awareness, critical thinking skills, the ability to communicate, moral reasoning, and responsibility in their students (Bok, 2006). 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. The past U. S. Secretary of Education, Margaret Spellings challenged colleges and universities to demonstrate their effectiveness in providing these skills to students and to work toward increasing America’s competitiveness in the global economy (U. S. Department of Education, 2006).

A quality education is more than a credential. Being able to communicate and work well with others is crucial for success. There is some evidence to suggest that most workers who lose their jobs do so because of an inability to work with others, not because they do not know how to do their jobs (Cascio, in Berger 2005). Writing, reading, being able to work with a diverse work team, and having the social skills required to be successful in a career and in society are qualities that go beyond merely earning a credential to compete for a job. Employers must select employees who are not only degreed, but who will be successful in the work environment. Hopefully, students gain these skills as they pursue their degrees.

International Contexts

To what extent does the theory of emerging adulthood apply internationally?

The answer to this question depends greatly on what part of the world is considered. Demographers make a distinction between the *developing countries* that comprise the majority of the world’s population and economically *developed countries* including the United States, Canada, Western Europe, Japan, South Korea, Australia, and New Zealand. On a population level, most of the human population resides in developing countries, which have much lower median incomes (if any); much lower median educational attainment (again, if any, due to lack of access to these kinds of resources); and much higher incidence of illness, disease, and early death. This puts the concept of “emerging adulthood” into perspective that it is a place of rather exclusive privilege to be able to explore within the construct of emerging adulthood in lots of ways.

Developed Countries: Some Advantages of Which Most of the World Does Not Have Access

Worth noting, there is substantial variability in how emerging adulthood is experienced across developed countries. Europe is the region where emerging adulthood is longest and most leisurely. The median ages for entering marriage and parenthood are near age 30 in most European countries (Lally & Valentine-French, 2017). Europe today is the location of the most affluent, generous, and egalitarian societies in the world—in fact, in human history (Arnett, 2007). Governments pay for tertiary education, assist young people in finding jobs, and provide unemployment benefits for those who cannot find work, for the most part (with some but low restrictions). In northern Europe, many governments also provide housing support. Emerging adults in European societies have the option to make the most of these advantages, gradually making their way to adulthood during their twenties while often enjoying travel and leisure with friends.

The lives of Asian emerging adults in developed countries such as Japan and South Korea are in some ways similar to the lives of emerging adults in Europe and in some ways strikingly different. Like European emerging adults, Asian emerging adults tend to enter marriage and parenthood around age 30 (Arnett, 2011). Like European emerging adults, Asian emerging adults in Japan and South Korea enjoy the benefits of living in affluent societies with social welfare systems that provide support for them in making the transition to adulthood—for example, free university education and substantial unemployment benefits.

However, in other ways, the experience of emerging adulthood in Asian developed countries is markedly different than in Europe. Europe has a long history of individualism, and today's emerging adults carry that legacy with them in their focus on self-development and leisure during emerging adulthood. In contrast, Asian cultures have a shared cultural history emphasizing collectivism and family obligations. Although Asian cultures have become more individualistic in recent decades due to globalization, the legacy of collectivism persists in the lives of emerging adults. They pursue identity explorations and self-development during emerging adulthood, like their American and European counterparts, but within narrower boundaries set by their sense of obligations to others, especially their parents/caregivers (Phinney & Baldelomar, 2011). For example, in their views of the most important criteria for becoming an adult, emerging adults in the United States and Europe consistently rank *financial independence* among the most important markers of adulthood. In contrast, emerging adults with an Asian cultural background especially emphasize becoming *capable of supporting parents financially* as among the most important criteria (Arnett, 2003; Nelson, Badger, & Wu, 2004). This sense of family obligation may curtail their identity explorations in emerging adulthood to some extent, as they pay more heed to their parents'/ caregivers wishes about what they should study, what job they should take, and where they should live than emerging adults do in the West (Lally & Valentine-French, 2017).

Another notable contrast between Western and Asian emerging adults is in their sexuality. In the West, premarital sex is largely considered normative by the late teens, more than a decade before most people enter marriage. In the United States and Canada, and in northern and eastern Europe, living together with an intimate partner is also normative; most people have at least one cohabiting partnership before marriage (if they choose to marry...many do not). In southern Europe, cohabiting is often still considered taboo, but premarital sex is tolerated in emerging adulthood. In contrast, both premarital sex and cohabitation remain unapproved of (on a society level) throughout Asia. Even dating is often discouraged until the mid to late twenties, when it would be a prelude to a serious relationship leading to marriage. In cross-cultural comparisons, about three fourths of emerging adults in the United States and Europe report having had premarital sexual relations by age 20, versus less than one fifth in Japan and South Korea (Hatfield and Rapson, 2006).

Developing Countries: Low But Rising

Emerging adulthood is well established as a normative life stage in the developed countries described so far, but it is still growing for developing countries. Demographically, in developing countries as in developed countries, the median ages for entering marriage and parenthood have been rising in recent decades, and an increasing proportion of young people have obtained post-secondary education. Nevertheless, currently it is only a minority of young people in developing countries who experience anything resembling emerging adulthood. The majority of the population still marries around age 20 and has long finished education by the late teens.

For young people in developing countries, emerging adulthood exists only for the wealthier segment of society, mainly the urban middle class, whereas the rural and urban poor—the majority of the population—have no emerging adulthood and may even have no adolescence because they enter adult-like work at an early age and also begin marriage and parenthood relatively early. However, as globalization proceeds, and economic development along with it, the proportion of young people who experience emerging adulthood is predicted to increase as the middle class expands in those countries. By the end of the 21st century, emerging adulthood is likely to be normative worldwide.

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8.6: Relationships in Early Adulthood

Erikson: Intimacy vs. Isolation

Erikson's sixth stage focuses on establishing intimate relationships or risking social isolation. Intimate relationships can be more difficult if one is still struggling with identity. This does not mean that a sense of identity will not change. Achieving a sense of identity is a life-long process, of course, and there are periods of identity crisis and stability over time. However, once a basic sense of identity is established intimate relationships can be pursued more thoroughly. These intimate relationships include acquaintances and friendships, but also the more important close relationships, like long-term romantic relationships (Hendrick & Hendrick, 2000).

Friendships

In our 20's intimacy needs may be met in friendships rather than with partners. This is especially true in the United States today as many young adults postpone making long-term commitments to partners, either in marriage or in cohabitation. The kinds of friendships shared by female identified individuals tend to differ from those shared by male identified individuals (Tannen, 1990). To give a binary example, let's look at the general way men and women are socialized differently in the United States: Friendships between men are more likely to involve sharing information, providing solutions, or focusing on activities rather than discussion problems or emotions. Men tend to discuss opinions or factual information or spend time together in an activity of mutual interest. Friendships between women are more likely to focus on sharing weaknesses, emotions, or problems. Women talk about difficulties they are having in other relationships and express their sadness, frustrations, and joys. You can see how these differences in approaches may lead to problems when men and women communicate on a charged (emotionally) topic. She may want to vent about a problem she is having; he may want to provide a solution and move on to some activity. But when he offers a solution, she thinks he does not care.

While this is certainly not always the case, friendships between men and women can become more difficult because of the unspoken question about whether the friendships will lead to a romantic involvement. Consequently, friendships may diminish once a person has a partner or single friends may be replaced with couple friends.

Factors Influencing Attraction

Because most of us enter into a close relationship at some point, it is useful to know what psychologists have learned about the principles of "liking" and "loving." A major interest of psychologists is the study of interpersonal **attraction**, *or what makes people like, and even love, each other.*

Similarity

One important factor in attraction is a perceived similarity in values and beliefs between the partners (Davis & Rusbult, 2001). While it is more convenient if the partners like the same general activities, similarity in this context is about supporting one's values. *Having others believe in the same things we do helps us feel validated in our beliefs.* This is referred to as **consensual validation** and is an important aspect of why we are attracted to others.

Self-Disclosure

Liking is also enhanced by **self-disclosure**, *the tendency to communicate frequently, without constant fear of reprisal, and in an accepting and empathetic manner.* Friends are friends because we can talk to them openly about our needs and goals and because they listen and respond to our needs (Reis & Aron, 2008). However, self-disclosure must be balanced. If we open up about our concerns that are important to us, we expect our partner to do the same in return. If the self-disclosure is not reciprocal, the relationship may not last.

Proximity

Another important determinant of liking is **proximity**, *or the extent to which people are physically near us.* Research has found that we are more likely to develop friendships with people who are nearby, for instance, those who live in the same dorm that we do, and even with people who just happen to sit nearer to us in our classes (Back, Schmukle, & Egloff, 2008).

Proximity has its effect on liking through the principle of **mere exposure**, which is *the tendency to prefer stimuli (including, but not limited to people) that we have seen more frequently*. The effect of mere exposure is powerful and occurs in a wide variety of situations. Infants tend to smile at a photograph of someone they have seen before more than they smile at a photograph of someone they are seeing for the first time, and people prefer side- to-side reversed images of their own faces over their normal (nonreversed) face, whereas their friends prefer their normal face over the reversed one. This is expected on the basis of mere exposure, since people see their own faces primarily in mirrors, and thus are exposed to the reversed face more often (Lally & Valentine-French, 2017).

Mere exposure may well have an evolutionary basis. We have an initial fear of the unknown, but as things become more familiar they seem more similar and safe, and thus produce more positive affect and seem less threatening and dangerous (Harmon-Jones & Allen, 2001; Freitas, Azizian, Travers, & Berry, 2005). When the stimuli are people, there may well be an added effect. Familiar people become more likely to be seen as part of the ingroup rather than the outgroup, and this may lead us to like them more.

The Matching Hypothesis

So - we are attracted to those that share our values, allow us to share ourselves with them, and who are physically near to us. It also seems that we most commonly select our physical and social "match". In other words, we are more likely to select a partner who is equally physically attractive and/or shares our social status.

Online Relationships

What impact does the internet have on the pool of eligibles? There are hundreds of websites designed to help people meet. Some of these are geared toward helping people find suitable marriage partners and others focus on less committed involvements. Websites focus on specific populations-curved, beautiful women, Christian motorcyclists, parents/caregivers without partners, LGBTQ, book enthusiasts, and people over 50, etc. Theoretically, the pool of eligibles is much larger as a result. However, many who visit sites are not interested in marriage or commitment; many are already married or partnered. And so, if a person is looking for a partner online, the pool must be filtered again to eliminate those who are not seeking long-term relationships. While this is true in the traditional marriage/commitment market as well, knowing a person's intentions and determining the sincerity of their responses becomes problematic online.

Online communication differs from face-to-face interaction in a number of ways. In face-to-face meetings, people have many cues upon which to base their first impressions. A person's looks, voice, mannerisms, dress, scent, and surroundings all provide information in face-to-face meetings. But in computer-mediated meetings, written messages are the only cues provided. Fantasy is used to conjure up images of voice, physical appearance, mannerisms, and so forth. The anonymity of online involvement makes it easier to become intimate without fear of interdependence. It is easier to tell one's secrets because there is little fear of loss. One can find a virtual partner who is warm, accepting, and undemanding (Gwinnell, 1998). And exchanges can be focused more on emotional attraction than physical appearance.



Figure 8.6.1: First comes attraction - then comes marriage - or does it? (Unsplash license; [George Coletrain](#) via [Unsplash](#))

When online, people tend to disclose more intimate details about themselves more quickly. A shy person can open up without worrying about whether or not the partner is frowning or looking away. And someone who has been abused may feel safer in virtual relationships. None of the worries of home or work get in the way of the exchange. The partner can be given one's undivided attention, unlike trying to have a conversation on the phone with a houseful of others or at work between duties. Online exchanges take the place of the corner café as a place to relax, have fun, and be you (Brooks, 1997). However, breaking up or disappearing is also easier. A person can simply not respond, or block e-mail.

But what happens if the partners meet face to face? People often complain that pictures they have been provided of the partner are misleading. And once couples begin to think more seriously about the relationship, the reality of family situations, work demands, goals, timing, values, and money all add new dimensions to the mix. Next we will turn our attention to theories of love.

Attachment in Young Adulthood

What's your Attachment Style? (Hazan and Shaver, 1987)

Which of the following best describes you in your intimate relationships? Note - "intimate" need not be interpreted as physical intimacy.

- Secure: I find it relatively easy to get close to others and am comfortable depending on them and having them depend on me. I don't often worry about being abandoned or about someone getting too close to me.
- Avoidant: I am somewhat uncomfortable being close to others; I find it difficult to trust them completely, difficult to allow myself to depend on them. I am nervous when anyone gets too close, and often, love partners want me to be more intimate than I feel comfortable being.
- Anxious: I find that others are reluctant to get as close as I would like. I often worry that my partner doesn't really love me or won't stay with me. I want to merge completely with another person, and this sometimes scares people away.

Hazan and Shaver (1987) described the attachment styles of adults, using the same three general categories proposed by Mary Ainsworth's research on young children; secure, avoidant, and anxious/ambivalent. Where do you fit?

Attachment-Related Anxiety and Avoidance (Bartholomew, 1990)

Bartholomew (1990) challenged the categorical view of attachment in adults and suggested that adult attachment was best described as varying along two dimensions; attachment-related anxiety and attachment-related avoidance. **Attachment-related anxiety** refers to the extent to which an adult worries about whether their partner really loves them. Those who score high on this dimension fear that their partner will reject or abandon them (Fraley, Hudson, Heffernan, & Segal, 2015). **Attachment-related avoidance** refers to whether an adult can open up to others, and whether they trust and feel they can depend on others. Those who score high on attachment-related avoidance are uncomfortable with opening up and may fear that such dependency may limit their sense of autonomy (Fraley et al., 2015). According to Bartholomew (1990) this would yield four possible attachment styles in adults; secure, dismissing, preoccupied, and fearful- avoidant.

Securely attached adults score lower on both dimensions. They are comfortable trusting their partners and do not worry excessively about their partner's love for them. Adults with a dismissing style score low on attachment-related anxiety, but higher on attachment-related avoidance. Such adults have a higher tendency to dismiss the importance of relationships. They trust themselves, but do not trust others, thus do not readily share their dreams, goals, and fears with others. They do not depend on other people, and feel uncomfortable when they have to do so.

Those with a preoccupied attachment are low in attachment-related avoidance, but high in attachment-related anxiety. Such adults are often prone to jealousy and worry that their partner does not love them as much as they need to be loved. Adults whose attachment style is fearful- avoidant score high on both attachment-related avoidance and attachment-related anxiety. These adults want close relationships, but do not feel comfortable getting emotionally close to others.

They have trust issues with others and often do not trust their own social skills in maintaining relationships.

Research on Adult Attachment

Research on attachment in adulthood has found that:

- Adults with insecure attachments report lower satisfaction in their relationships (Butzer, & Campbell, 2008; Holland, Fraley, & Roisman, 2012).
- Those high in attachment-related anxiety report more daily conflict in their relationships (Campbell, Simpson, Boldry, & Kashy, 2005).
- Those with avoidant attachment exhibit less support to their partners (Simpson, Rholes, Oriña, & Grich, 2002).
- Young adults show greater attachment-related anxiety than do middle-aged or older adults (Chopik, Edelstein, & Fraley, 2013).

- Some studies report that young adults show more attachment-related avoidance (Schindler, Fagundes, & Murdock, 2010), while other studies find that middle-aged adults show higher avoidance than younger or older adults (Chopik et, 2013).
- Young adults with more secure and positive relationships with their parents make the transition to adulthood more easily than do those with more insecure attachments (Fraley, 2013).

Do people with certain attachment styles attract those with similar styles?

When people are asked what kinds of psychological or behavioral qualities they are seeking in a romantic/intimate partner, a large majority of people indicate that they are seeking someone who is kind, caring, trustworthy, and understanding, that is the kinds of attributes that characterize a “secure” caregiver (Chappell & Davis, 1998). However, we know that people do not always end up with others who meet their ideals. Are secure people more likely to end up with secure partners, and, vice versa, are insecure people more likely to end up with insecure partners? The majority of the research that has been conducted to date suggests that the answer is “yes.”

One important question is whether these findings exist because (a) secure people are more likely to be attracted to other secure people, (b) secure people are likely to create security in their partners over time, or (c) some combination of these possibilities. Existing empirical research strongly supports the first alternative. For example, when people have the opportunity to interact with individuals who vary in security in a speed-dating context, they express a greater interest in those who are higher in security than those who are more insecure (McClure, Lydon, Baccus, & Baldwin, 2010). However, there is also some evidence that people’s attachment styles mutually shape one another in close relationships. For example, in a longitudinal study, Hudson, Fraley, Vicary, and Brumbaugh (2012) found that, if one person in a relationship experienced a change in security, their partner was likely to experience a change in the same direction.

Do early experiences as children shape adult attachment?

The majority of research on this issue is retrospective; that is, it relies on adults’ reports of what they recall about their childhood experiences. This kind of work suggests that secure adults are more likely to describe their early childhood experiences with their parents/caregivers as being supportive, loving, and kind (Hazan & Shaver, 1987). A number of longitudinal studies are emerging that demonstrate prospective associations between early attachment experiences and adult attachment styles and/or interpersonal functioning in adulthood. For example, Fraley, Roisman, Booth-LaForce, Owen, and Holland (2013) found in a sample of more than 700 individuals studied from infancy to adulthood that primary caregiver sensitivity across development prospectively predicted security at age 18. Simpson, Collins, Tran, and Haydon (2007) found that attachment security, assessed in infancy in the strange situation, predicted peer competence in grades one to three, which, in turn, predicted the quality of friendship relationships at age 16, which, in turn, predicted the expression of positive and negative emotions in their adult romantic/intimate relationships at ages 20 to 23.

It is easy to come away from such findings with the mistaken assumption that early experiences “determine” later outcomes. To be clear: Attachment theorists assume that the relationship between early experiences and subsequent outcomes is probabilistic, not deterministic. Having supportive and responsive experiences with caregivers early in life is assumed to set the stage for positive social development. But that does not mean that attachment patterns are set in stone. In short, even if an individual has far from optimal experiences in early life, attachment theory suggests that it is possible for that individual to develop well-functioning adult relationships through a number of corrective experiences, including relationships with siblings, other family members, teachers, and close friends. Security is best viewed as a culmination of a person’s attachment history rather than a reflection of their early experiences alone. Those early experiences are considered important, not because they determine a person’s fate, but because they provide the foundation for subsequent experiences.

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8.7: Love in Early Adulthood

Sternberg's Triangle of Love: Three Components



Figure 8.7.1 (Pexels license; **Matheus Alves** via **Pexels**)

Sternberg (1988) suggests that there are three main components of love: passion, intimacy, and commitment. Love relationships vary depending on the presence or absence of each of these components. Passion refers to the intense, physical attraction partners feel toward one another. Intimacy involves the ability to share feelings, personal thoughts and psychological closeness with the other. Commitment is the conscious decision to stay together. Passion can be found in the early stages of a relationship, but intimacy takes time to develop because it is based on knowledge of the partner. Once intimacy has been established, partners may resolve to stay in the relationship. Although many would agree that all three components are important to a relationship, many love relationships do not consist of all three. Let's look at other possibilities.

Other Types of Love

Liking

In this relationship, intimacy or knowledge of the other and a sense of closeness is present. Passion and commitment, however, are not. Partners feel free to be themselves and disclose personal information. They may feel that the other person knows them well and can be honest with them and let them know if they think the person is wrong. These partners are friends. However, being told that your partner 'thinks of you as a friend' can be a devastating blow if you are attracted to them and seek a romantic involvement.

Infatuation

Perhaps, this is Sternberg's version of "love at first sight". Infatuation consists of an immediate, intense physical attraction to someone. A person who is infatuated finds it hard to think of anything but the other person. Brief encounters are played over and over in one's head; it may be difficult to eat and there may be a rather constant state of arousal. Infatuation is rather short-lived, however, lasting perhaps only a matter of months or as long as a year or so. It tends to be based on chemical attraction and an image of what one thinks the other is all about.

Empty Love

This type of love may be found in a relationship that was formed to meet needs other than intimacy or passion (money, child-rearing, status). Here the partners are committed to staying in the relationship (for the children, because of a religious conviction, or because there are no alternatives perhaps), but do not share ideas or feelings with each other and have no physical attraction for one another.

Fatuous Love

Some people who have a strong physical attraction push for commitment early in the relationship. Passion and commitment are aspects of fatuous love. There is no intimacy and the commitment is premature. Partners rarely talk seriously or share their ideas. They focus on their intense physical attraction and yet one, or both, is also talking of making a lasting commitment. Sometimes this is out of a sense of insecurity and a desire to make sure the partner is locked into the relationship.

Romantic Love

Intimacy and passion are components of romantic love, but there is no commitment. The partners spend much time with one another and enjoy their closeness but have not made plans to continue as fully committed long term. This may be true because they are not in a position to make such commitments or because they are looking for passion and closeness and are afraid it will die out if they commit to one another and start to focus on other kinds of obligations.

Companionate Love

Intimacy and commitment are the hallmarks of companionate love. Partners love and respect one another and they are committed to staying together. But their physical attraction may have never been strong or may have just died out. This may be interpreted as 'just the way things are' after so much time together or there may be a sense of regret and loss. Nevertheless, partners are good friends committed to one another.

Consummate Love

Intimacy, passion, and commitment are present in consummate love. This is often considered the "ideal" and most fulfilling type of love, at least from a Western perspective. The couple shares passion; they continue to work things out and grow together, and the closeness is there. They feel like best friends as well as lovers and they are committed to staying together.

Types of Love - By Their Components

- Liking - intimacy alone
- Infatuation - passion alone
- Empty love - commitment alone
- Romantic love - intimacy and passion
- Fatuous love - passion and commitment
- Companionate love - intimacy and commitment
- Consummate love - intimacy and passion and commitment

Types of Lovers

Lee (1973) offers a theory of love styles or types of lovers derived from an analysis of writings about love through the centuries. As you read these, think about how these styles might become part of the types of love described above.

Pragma is a style of love that emphasizes the practical aspects of love. The pragmatic lover considers compatibility and the sensibility of their choice of partners. This lover will be concerned with goals in life, status, family reputation, attitudes about parenting/caregiving, career issues and other practical concerns.

Mania is a style of love characterized by volatility, insecurity, and possessiveness. This lover gets highly upset during arguments or breakups, and feels emotions very intensely.

Agape is an altruistic, selfless love. These partners give of themselves in healthy ways without expecting anything in return.

Eros is an erotic style of loving in which the person feels consumed. Physical chemistry and emotional involvement are important to this type of lover.

Ludus refers to a style of loving that emphasizes the game of seduction and fun. Such a lover stays away from commitment and often has several love interests at the same time. This lover does not self-disclose and in fact may prefer to keep the other guessing. This lover can end a relationship easily.

Storge is a style of love that develops slowly over time. It often begins as a friendship and becomes sexual much later. These partners are likely to remain friends even after a breakup.

Frames of Relationships Model

Another useful way to consider relationships is to consider the amount of dependency in the relationship. Davidson (1991) suggests three models. The **A-frame** relationship is one in which the partners lean on one another and are highly dependent on the other for survival. If one partner changes, the other is at risk of 'falling over'. This type of relationship cannot easily accommodate change and the partners are vulnerable should change occur. A breakup could be devastating.

The **H-frame** relationship is one in which the partners live parallel lives. They rarely spend time with one another and tend to have separate lives. What time they do share is usually spent meeting obligations rather than sharing intimacies. This independent type of relationship can end without intense suffering emotionally.

The **M-frame** relationship is interdependent. Partners have a strong sense of connection but also are able to stand alone without suffering devastation. If this relationship ends, partners will be hurt and saddened, but will still be able to stand alone. This ability comes from a strong sense of self-love. Partners can love each other without losing a sense of self. And each individual has self-respect and confidence that enriches the relationship as well as strengthens the self.

We have been looking at love in the context of many kinds of relationships. In our next lesson, we will focus more specifically on marital relationships. But before we do, we examine the dynamics of falling in and out of love.

The Process of Love and Breaking Up

Reiss (1960) provides a theory of love as process. Based on the *Wheel Theory of Love*, love relationships begin with the establishment of rapport.

Rapport involves sharing likes, preferences, establishing some common interests. The next step is to begin to disclose more personal information through self-revelation. When one person begins to open up, the social expectation is that the other will follow and also share more personal information so that each has made some risk and trust is built. Gradually, partners begin to disclose even more about themselves and are met with support and acceptance as they build mutual dependency. With time, partners come to rely on each other for need fulfillment. The wheel must continue in order for love to last. It becomes important for partners to continue to establish rapport by discussing the day's events, communicating about their goals and desires, and showing signs of trust and affection, appropriate for them. If the wheel turns backward, partners talk less and less, rely less on one another and are less likely to disclose.

Process of Disaffection: Breaking Up

When relationships are new, partners tend to give one another the benefit of the doubt and focus on what they like about one another. Flaws and imperfections do not go unnoticed; rather, they are described as endearing qualities. However, once partners begin the process of breaking up, these views are abandoned and questionable qualities are once again flaws and imperfections.

Kersten (1990) provides a look at the dynamics of breaking up. Although this work is primarily about divorce, the dynamics of dissolving any long-term relationship are similar. The beginning phase of breaking up involves seeing imperfections in the relationship but remaining hopeful that things will improve. This improvement will require the partner's cooperation because they are primarily at fault. So, as long as the offending partner makes the necessary changes, and of course the offended partner will provide the advice, support, and guidance required, the relationship will continue (if you are thinking that this is not going to work-you are right. Attempts to change one's partner are usually doomed to failure).

Once it becomes clear that efforts to change are futile, the middle phase is entered. This phase is marked by disappointment. Partners talk less and less, make little eye contact, and grow further apart. One may still try to make contact, but the other is clearly disengaged and is considering the benefits and costs of leaving the relationship.

In the end phase, the decision to leave has been made. The specific details are being worked out. Turning a relationship around is very difficult at this point. Trust has diminished, and thoughts have turned elsewhere. This stage is one of hopelessness.

Conclusion

The new life stage of emerging adulthood has spread rapidly and is continuing to spread. Now that the transition to adulthood is later than in the past, is this change positive or negative for emerging adults and their societies? Certainly there are some negatives. It means that young people are dependent on their parents/caregivers for longer than in the past, and they take longer to become fully contributing members of their societies. A substantial proportion of emerging adults have trouble sorting through the opportunities available to them and struggle with anxiety and depression, even though most are optimistic. However, there are advantages to having this new life stage as well. By waiting until at least their late twenties to take on the full range of adult responsibilities, emerging adults are able to focus on obtaining enough education and training to prepare themselves for the demands of today's information- and technology-based economy. Also, it seems likely that if young people make crucial decisions

about love and work in their late twenties or early thirties rather than their late teens and early twenties, their judgment will be more mature and they will have a better chance of making choices that will work out well for them in the long run.

What can societies do to enhance the likelihood that emerging adults will make a successful transition to adulthood? One important step would be to expand the opportunities for obtaining tertiary education. The tertiary education systems of developed countries were constructed at a time when the economy was much different, and they have not expanded at the rate needed to serve all the emerging adults who need such education. Furthermore, in some countries, such as the United States, the cost of tertiary education has risen steeply and is often unaffordable to many young people. In developing countries, tertiary education systems are even smaller and less able to accommodate their emerging adults. Across the world, societies would be wise to strive to make it possible for every emerging adult to receive tertiary education, free of charge. There could be no better investment for preparing young people for the economy of the future.

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CHAPTER OVERVIEW

9: Middle Adulthood

- 9.1: Middle Adulthood - What Will You Learn?
- 9.2: Psychosocial Development in Middle Adulthood
- 9.3: Crisis, Personality, and Intimacy
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- Playing with the annoying headers...

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9.1: Middle Adulthood - What Will You Learn?

After reading "Middle Adulthood" you should be able to:

1. List developmental tasks of midlife.
 2. Describe cognitive development in midlife.
 3. Compare midlife students with younger students and their approach to learning.
 4. Contrast the expert and the novice.
 5. Explore the notion of the midlife crisis.
 6. Describe Erikson's stage of generativity vs. stagnation.
 7. Compare types of singles.
 8. Contrast intrinsic and utilitarian marriages.
 9. Describe personality theories and changes in midlife.
 10. Discuss developmental tasks in middle adulthood.
-

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9.2: Psychosocial Development in Middle Adulthood

Childhood, adolescence, even the "twilight years" have been studied extensively, but the wide terrain known as midlife – one of the longest stages – remains largely uncharted. How well are Americans functioning at midlife? Why do some experience better health and greater well-being than others?

Middle adulthood, or midlife, refers to the period of the lifespan between early adulthood and late adulthood. Although ages and tasks are culturally defined, the most common age definition is from 40–45 to 60–65. This may be the least studied time of the lifespan currently, and research on this developmental period is relatively new as many aspects of midlife are still being explored. We do know that this stage reflects both developmental gains and losses and that there are considerable individual differences, but there is still much to learn about this period in the lifespan. Note that this stage could be viewed as lasting 25 years (40–65) – and consider how many stages we have already considered. As average life expectancy at birth in the United States as of 2018 is about 80 (78.7, [per CDC](#)), we can expect late adulthood to last at least 15 years (65–80). And given that as of 2020 the maximum human life span has been documented to be 122, late adulthood is our longest life stage – lasting close to 60 years for some.



Figure 9.2.1: The adult in middle-age may be the insides of a sandwich, caring for their children and a parent (the sandwich bread). (Pexels license; [Lovefood Art](#) via [Pexels](#))

Developmental Tasks of Middle Adulthood

Midlife brings an increase in coping strategies. Margie Lachman, Ph.D, is a leader in the field of middle adulthood and aging and provides a comprehensive overview of the rewards and challenges those in middle adulthood may experience. These include:

1. Launching children into their own lives.
2. Adjusting to home-life without children (often referred to as the empty nest).
3. Dealing with adult children who return to live at home (known as boomerang children in the United States).
4. Losing parents/caregivers and experiencing associates grief.
5. Becoming grandparents.
6. Preparing for late adulthood.
7. Acting as caregivers for aging parents/caregivers or spouses.

Midlife Relationships

The Sandwich Generation

The **sandwich generation** refers to adults who have at least one parent/caregiver age 65 or older and are either raising their own children or providing support for their grown children. According to a 2013 Pew Research survey, 47% of middle-aged adults are part of this sandwich generation (Parker & Patten, 2013). In addition, 15% of middle-aged adults are providing financial support to an older parent while raising or supporting their own children. According to the same survey, almost half (48%) of middle-aged adults, have supported their adult children in the past year, and 27% are the primary source of support for their grown children.

The Pew survey found that almost 1 in 3 of the sandwich-generation adults were more likely to say they always feel rushed, while only 23% of other adults said this. However, the survey suggests that those who were supporting both parents and children reported being just as happy as those middle-aged adults who did not find themselves in the sandwich generation (Parker & Patten, 2013). Adults who are supporting both parents/caregivers and children did report greater financial strain. Only 28% reported that they

were living comfortably versus 41% of those who were not also supporting their parents/caregivers. Almost 1/3 were just making ends meet, compared with 17% of those who did not have the additional financial burden of aging parents.

Kinkeeping

At midlife adults may find themselves as a **kinkeeper**. In all families there is a *person or persons who keep the family connected and who promote solidarity and continuity in the family* (Brown & DeRycke, 2010). Who in your own family do you count on to organize family gatherings? Who knows the history of your family? Who do people turn to in your family for advice and support? Who works to strengthen the bonds between members of your family? These are your family's kinkeepers, and they are usually women (Leach & Braithwaite, 1996; Brown & DeRycke, 2010). Leach and Braithwaite found that 86% of their respondents named a woman as their family's kinkeeper, and Brown and DeRycke found that mothers, maternal grandmothers, and paternal grandmothers were more likely to be a family's kinkeeper than were fathers, young adult children, and grandfathers combined. Brown and DeRycke also found that among young adults, women were more likely to be a kinkeeper than were young adult men.

Kinkeeping can be a source of distress when it interferes with other obligations (Gerstel & Gallagher, 1993). Gerstel and Gallagher found that on average, kinkeepers provide almost a full week of work each month to kinkeeping (almost 34 hours). They also found that the more activities the kinkeeper took on, and the more kin they helped the more stress and higher the levels of depression a kinkeeper experienced. However, unlike other studies on kinkeeping, Gerstel and Gallagher also included a number of activities that would be considered more "caregiving," such as providing transportation, making repairs, providing meals, etc. in addition to the usual activities of kinkeeping.

The Empty Nest

The **empty nest**, or post-parental period (Dennerstein, Dudley & Guthrie, 2002), *refers to the time period when children are grown up and have left home*. For most parents this occurs during midlife. This time is recognized as a "normative event" as parents are aware that their children will become adults and eventually leave home (Mitchell & Lovegreen, 2009). The empty nest creates complex emotions, both positive and negative, for many parents. Some theorists suggest this is a time of role loss for parents, others suggest it is one of role strain relief (Bouchard, 2013).

The role loss hypothesis predicts that when people lose an important role in their life they experience a decrease in emotional well-being. It is from this perspective that the concept of the **empty nest syndrome** emerged, which *refers to great emotional distress experienced by parents, typically mothers, after children have left home*. The empty nest syndrome is linked to the absence of alternative roles for the parent in which they could establish their identity (Borland, 1982). In Bouchard's (2013) review of the research, she found that few parents reported loneliness or a big sense of loss once all their children had left home.

In contrast, the role stress relief hypothesis suggests that the empty nest period should lead to more positive changes for parents, as the responsibility of raising children has been lifted. The role strain relief hypothesis was supported by many studies in Bouchard's (2013) review. A consistent finding throughout the research literature is that raising children has a negative impact on the quality of marital relationships (Ahlborg, Misvaer, & Möller, 2009; Bouchard, 2013). Several studies have reported that marital satisfaction often increases during the launching phase of the empty nest period, and that this satisfaction endures long after the last child has left home (Gorchoff, John, & Helson, 2008).

However, most of the research on the post-parental period has been with American parents. A number of studies in China suggest that empty-nesters, especially in more rural areas of China, report greater loneliness and depression than their counterparts with children still at home (Wu et al., 2010). Family support for the elderly by their children is a cherished Chinese tradition (Wong & Leung, 2012). With children moving from the rural communities to the larger cities for education and employment this may explain the more pessimistic reaction of Chinese parents than in American samples. The loss of an adult child in a rural region may mean a loss of family income for aging parents. Empty-nesters in urban regions of China did not report the same degree of distress (Su et al., 2012), suggesting that it not so much the event of children leaving, but the additional hardships this may place on aging parents.

Boomerang Kids

Today, young adults are living with their parents for a longer duration and in greater numbers than previous generations. In addition to those in early adulthood who are not leaving the home of their parents, there are also *young adults who are returning after having lived independently outside the home*, and these are called **boomerang kids**. Many of the same financial reasons that are influencing young people's decisions to delay exit from the home of their parents are underlying their decisions to return home. In

addition, to financial reasons, some boomerang kids are returning because of emotional distress, such as mental health issues (Sandberg-Thoma, Snyder, & Jang, 2015).

What is the effect on parents when their adult children return home? Certainly there is considerable research that shows that the stress of raising children can have a negative impact on parents' well-being, and that when children leave home many couples experience less stress and greater life satisfaction (see the section on the empty nest). Early research in the 1980s and 1990s supported the notion that boomerang children, along with those who were failing to exit the home, placed greater financial hardship on the parents, and the parents reported more negative perceptions of this living arrangement (Aquilino, 1991). Recent surveys suggest that today's parents are more tolerant of this, perhaps because this is becoming a more normative experience than in the past. Moreover, children who return are more likely to have had good relationships with their parents growing up, so there may be less stress between parents and their adult children who return (Sandberg-Thoma et al., 2015). Parents of young adults who have moved back home because of economic reasons report that they are just as satisfied with their life as are parents whose adult children are still living independently (Parker, 2012). Parker found that adult children age 25 and older are more likely to contribute financially to the family or complete chores and other household duties. Parker also found that living in a multigenerational household may be acting as an economic safety net for young adults. In comparison to young adults who were living outside of the home, those living with their parents were less likely to be living in poverty (17% versus 10%).

In 2020, we see an even great rate of young adults living at home. [As reported by the Pew Research Center:](#)

The [coronavirus outbreak](#) has pushed millions of Americans, especially young adults, to move in with family members. The share of 18- to 29-year-olds living with their parents has become a majority since U.S. coronavirus cases began spreading early this year, surpassing the previous peak during the Great Depression era. In July, 52% of young adults resided with one or both of their parents, up from 47% in February, according to a new Pew Research Center analysis of monthly Census Bureau data. The number living with parents grew to 26.6 million, an increase of 2.6 million from February. The number and share of young adults living with their parents grew across the board for all major racial and ethnic groups, men and women, and metropolitan and rural residents, as well as in all four main census regions. Growth was sharpest for the youngest adults (ages 18 to 24) and for White young adults.

So far we have considered the impact that adult children who have returned home or have yet to leave the nest have on the lives of middle-aged parents. What about the effect on parents who have adult children dealing with personal problems, such as alcoholism, chronic health concerns, mental health issues, trouble with the law, poor social relationships, or academic or job related problems, even if they are not living at home? The life course perspective proposes the idea of **linked lives** (Greenfield & Marks, 2006). *The notion that people in important relationships, such as children and parents, mutually influence each other's developmental pathways.* In previous chapters you have read about the effects that parents have on their children's development, but this relationship is bidirectional. The problems faced by children, even when those children are adults, influence the lives of their parents. Greenfield and Marks found in their study of middle-aged parents and their adult children, those parents whose children were dealing with personal problems reported more negative affect, lower self-acceptance, poorer parent-child interactions, and more family relationship stress. The more problems the adult children were facing, the worse the lives and emotional health of their parents, with single parents faring the worst.

Erikson: Generativity vs Stagnation

According to Erikson, midlife adults face the crisis of **generativity vs. stagnation**. This involves looking at one's life while asking the question, "Am I doing anything worthwhile? Is anyone going to know that I was here? What am I contributing to others?" If not, a feeling of being stuck or stagnated may result. This discomfort can motivate a person to redirect energies into more meaningful activities. It is important to make revisions here so that in later life, one may feel a sense of pride and accomplishment and feel at peace with their life and the choices that have been made.



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Figure 9.2.2: Middle-aged does not have to mean "old". (Unsplash

Generativity encompasses mentoring, productivity, and creativity. By generativity, Erikson meant that we do best at this stage if we can focus energies on generating something we deem worthwhile that benefits someone else, society or even the world. Generativity is about creating something that lives on after we are gone. Having established a stable identity and relationships in previous stages, by middle adulthood we are more involved in larger matters as parents/caregivers, mentors, leaders and creators. Additionally, one of the implications here might be that if we regret something we didn't do or become when we were younger, there may be a way to recast those early dreams into something feasible and meaningful in the present (Adams, K. B., 2012). Erikson believed that the stage of generativity, during which one often established a family or a group of close friends and also a career or passion, was the longest of all the stages. Individuals at midlife are primarily concerned with leaving a positive legacy of some sort. Erikson understood that work and family relationships (or close friends) may be in conflict due to the obligations and responsibilities of each, but he believed it was overall a positive developmental time. In addition to being parents/caregivers and working, Erikson also described individuals being involved in the community during this stage. Conversely, a sense of stagnation may occur when one feels stuck, dissatisfied with their overall life or isolated with no intention of moving through it, psychologically or tangibly, as their own body/mind permits. Those in stagnation may carry unresolved regrets they can't seem to find peace with or some resolution of choices made. They are not active in generative matters. However, stagnation can also motive a person to redirect energies into more meaningful activities. Do you know anyone stuck in stagnation? What are some ways they may be able to move toward generativity?

Kotre (1984) described 4 types of generativity, each motivated by the desire to outlive the self.

- Biological - achieved by having children
- Parental - achieved by raising your own children - or the children of others - and passing down family traditions
- Technical (work) - the teaching of skills
- Cultural - passing on the traditions of one's culture

Generativity Traits

Highly Generative Adults tend to have these qualities:

- Lower in anxiety, depression.
- High in autonomy, self-acceptance, life satisfaction.
- They appear especially well-adjusted.
- They are more open to differing viewpoints; possess leadership qualities; desire more from work than financial rewards; and care greatly about the welfare of their family, close friends and the wider society

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9.3: Crisis, Personality, and Intimacy

Midlife Crisis?

Research suggests that most people in the United States today do not experience a midlife crisis and that, in fact, many women find midlife a freeing, satisfying period. While people in their early 20s may emphasize how old they are (to gain respect, to be viewed as experienced), by the time people reach their 40s, they tend to emphasize how young they are.

Results of a 10 year study conducted by the MacArthur Foundation Research Network on Successful Midlife Development, based on interviews with over 3,000 midlife adults suggest that the years between 40 and 60 are ones marked by a sense of well-being. Only 23 percent of their participants reported experiencing a midlife crisis. The crisis tended to also be triggered by a major life event rather than out of a fear of aging (Research Network on Successful Midlife Development, accessed 2007). Nevertheless, sales of products designed to make one feel younger than their age (as though aging is a bad thing!) and “over the hill” birthday parties with black balloons and banners abound.



Figure 9.3.1: The idea of a "midlife crisis" is largely a myth - with many finding satisfaction with this stage of life. (Pexels license; [Andrea Piacquadio](#) via [Pexels](#))

Personality in Midlife

Does the personality change in midlife? Think about your parents/caregivers or other adults you've known for some time. Did their personalities change when they reached midlife? Or were they pretty much the same? Some theorists maintain that personality becomes more stable as we reach middle adulthood. Other suggest that with age comes the addition of new personality traits - perhaps traits we may not have felt comfortable showing when we were younger. When we observe people around us, one of the first things that strikes us is how different people are from one another. Some people are very talkative while others are very quiet. Some are active whereas others are couch potatoes. Some worry a lot, others almost never seem anxious. Each time we use words like “talkative,” “quiet,” “active,” or “anxious,” to describe those around us, we are talking about a person’s personality—the characteristic ways that people differ from one another. Personality psychologists try to describe and understand these differences. “Are you an introvert?” In popular culture it’s common to talk about people being introverts or extroverts as if these were precise descriptions that meant the same thing for everyone. But research shows that these traits and others are quite variable within individuals at any age. Carl Jung believed that our personality actually matures as we get older. A healthy personality is one that is balanced. People suffer tension and anxiety when they fail to express all of their qualities. Jung believed that each of us possess a “shadow side”. For example, those who are typically introverted (inward looking, quiet) also have an extroverted (sociable, people-loving) side that rarely finds expression unless we are relaxed and uninhibited. Each of us has a spectrum of masculine to feminine sides but in younger years, so many feel societal pressure to give expression only to one. As we get older, we may become freer to express all of our traits as the situation arises. We find gender convergence in older adults. Men (male identified individuals) tend to become more interested in intimacy and family ties. Women (female identified individuals) tend to become more assertive. This gender convergence is also affected by changes in society's expectations for “males” and “females.” With each new generation we find that the roles of people are less stereotypic and this allows for change as well.

The most widely accepted system to emerge from the trait approach to studying personality was “The Big Five Personality Assessment” or “The Five-Factor Model” often referred to as just “The Big Five.” (Goldberg, 1990; McCrae & John, 1992; McCrae & Costa, 1987). The Big Five personality traits are openness, conscientiousness, extraversion, agreeableness, and neuroticism. These five factors are assumed to represent the basic structure behind all personality traits. They were defined and described by several different researchers during multiple periods of research. A way to remember these five is with the acronym

OCEAN (O is for Openness; C is for Conscientiousness; E is for Extraversion; A is for Agreeableness; N is for Neuroticism). As mentioned, midlife is viewed as a time of increased stability in many areas, especially if compared with early adulthood or adolescence. There are some notable changes in this area associated with middle adulthood though; Midlife adults tend to become more agreeable, but also decline in openness and neuroticism. Therefore, midlife is also viewed as a time of change.

The Five Traits

The traits are:

1. Openness – Openness to experience describes a person’s degree of intellectual curiosity, creativity, and preference for novelty and variety. Some disagreement remains about how to interpret this factor, which is sometimes called intellect.
2. Conscientiousness – Conscientiousness is a tendency to show self-discipline, act dutifully, and aim for achievement. Conscientiousness also refers to planning, organization, and dependability.
3. Extraversion – Extraversion describes energy, positive emotions, assertiveness, sociability, talkativeness, and the tendency to seek stimulation in the company of others.
4. Agreeableness – Agreeableness is the tendency to be compassionate and cooperative towards others rather than suspicious and antagonistic.
5. Neuroticism – Neuroticism describes regular vulnerability to strong, unpleasant emotions like anger, anxiety, or depression. Neuroticism also refers to an individual’s level of emotional stability (or lack of) and impulse control and is sometimes referred to as emotional stability.

Big 5 Traits and Examples for LOW Scorers and HIGH scorers (these are just examples of how these traits might manifest in people. There are, obviously, variabilities within expressions)

This table describes some example behaviors for low and high score on the Big Five

Big 5 Trait	Example Behavior for LOW Scorers	Example Behavior for HIGH Scorers
Openness	Prefers not to be exposed to other moral systems other than own; narrow interests; not analytical; also viewed as down-to-earth	Enjoys seeing people with new types of clothes, hairstyles, body piercings, etc.; curious; imaginative; nontraditional
Conscientiousness	Prefers spur-of-the-moment action to planning; can be unreliable; may be viewed as careless; lax	Never late for a date with friends; organized; hardworking; neat; persevering; punctual; self-disciplined
Extraversion	Preferring a quiet evening reading to a loud party; sober; aloof; may appear unenthusiastic to others	Being the life of the party; active; optimistic; fun-loving; affectionate
Agreeableness	Quickly and confidently asserts own rights; irritable; uncooperative; may be viewed as rude by others	Agrees with others easily; forgiving; gullible; good-natured
Neuroticism	Not getting irritated by small annoyances; calm; resilient; secure; self-satisfied	Constantly worrying about little things; insecure; hypochondriacal; feeling inadequate

Scores on the Big Five traits are mostly independent. That means that a person’s standing on one trait tells very little about their standing on the other traits of the Big Five. For example, a person can be extremely high in Extraversion and be either high or low on Neuroticism. Similarly, a person can be low in Agreeableness and be either high or low in Conscientiousness. Thus, in the Five-Factor Model, you need five scores to describe most of an individual’s personality.

An important feature of personality traits is that they reflect continuous distributions rather than distinct personality types. This means that when personality psychologists talk about Introverts and Extraverts, they are not really talking about two distinct types of people who are completely and qualitatively different from one another. Instead, they are talking about people who score

relatively low or relatively high along a continuous distribution. In fact, when personality psychologists measure traits like Extraversion, they typically find that most people score somewhere in the middle, with smaller numbers showing more extreme levels. Most people report being moderately, but not extremely, extraverted, with fewer people reporting very high or very low scores.

There are three criteria that characterize personality traits: (1) consistency, (2) stability, and (3) individual differences.

1. To have a personality trait, individuals must be somewhat consistent across situations in their behaviors related to the trait. For example, if they are talkative at home, they tend also to be talkative at work.
2. Individuals with a trait are also somewhat stable over time in behaviors related to the trait. If they are talkative, for example, at age 30, they will also tend to be talkative at age 40.
3. People differ from one another on behaviors related to the trait. Using speech is not a personality trait and neither is walking on two feet—virtually all individuals do these activities, and there are almost no individual differences. But people differ on how frequently they talk and how active they are, and thus personality traits such as Talkativeness and Activity Level do exist.

Traits are important and interesting to examine (especially in middle-adulthood) because they describe stable patterns of behavior that persist for long periods of time (Caspi, Roberts, & Shiner, 2005). Importantly, these stable patterns can have broad-ranging consequences for many areas of our life (Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007). For instance, think about the factors that determine success in college. If you were asked to guess what factors predict good grades in college, you might guess something like intelligence. This guess would be correct, but we know much more about who is likely to do well. Specifically, personality researchers have also found the personality traits like Conscientiousness play an important role in college and beyond, probably because highly conscientious individuals study hard, get their work done on time, and are less distracted by nonessential activities that take time away from school work. In addition, highly conscientious people are often healthier than people low in conscientiousness because they are more likely to maintain healthy diets, to exercise, and to follow basic safety procedures like wearing seat belts or bicycle helmets. Over the long term, this consistent pattern of behaviors can add up to meaningful differences in health and longevity and this becomes even more evident in middle adulthood.

Intimate Relationships

Middle adulthood is the perfect stage to discuss relationships. While relationships certainly become central much earlier than middle adulthood, it is in this stage that individuals have gained some life experience in this area and can reflect more deeply on where they have evolved (or not) and where they see themselves going...adding into the mix their own range of "generativity vs. stagnation" from Erickson's Model.

Single or Spouse-free? The number of adults who remain single has increased dramatically in the last 30 years. We have more people who never marry, more widows and more divorcees driving up the number of singles. According to the United Census Bureau, as of 2016, there were 109 million adults in the United States, 18 and older, who are divorced, widowed, or have always been single. That's 45 percent of the adult population. Whether or not a single person is happy depends on the circumstances of their remaining single. Singlehood has become a more acceptable lifestyle than it was in the past and many singles are very happy with their status.

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9.4: Marital Status and Divorce in Middle Age

Stein's Typology of Singles

Many of the research findings about singles reveal that they are not all alike. Happiness with one's status depends on whether the person is single by choice and whether the situation is permanent. Let's look at Stein's four categories of singles for a better understanding of this.

Stein's Four Categories of Singles

Voluntary temporary singles

These are people who have never been married or divorced people who are postponing potential remarriage. They may be more involved in careers or getting an education or prefer not to make a commitment to an intimate relationship for many reasons. These people tend to report being very happy with their single status. They are single by choice (voluntary), but not committed to another - or committed to staying single (temporary).

Voluntary permanent singles

These individuals do not want to marry and aren't intending to marry. This term could be a bit of a misnomer since it might also include cohabiting individuals who don't want to marry or others who are not considering marriage. These singles choose (voluntary) to be single - and plan to stay that way (permanent).

Involuntary temporary

These are people who are actively seeking partners. They hope to have a long term commitment (often through marriage) and may be involved in going on blind dates, seeking a partner on the internet or asking friends if they know someone who might be a good match. Not surprisingly, the involuntary temporary singles tend to be more anxious about their status.

Involuntary permanent

These are older divorced, widowed, or never-married people who wanted to marry but have not found a mate and are coming to accept singlehood as a probable permanent situation. Some are bitter about not having married or partnered while others are more accepting of how their life has developed.



Figure 9.4.1 (Unsplash license; [Katherine Hanlon](#) via [Unsplash](#))

Marriage

It has been said that marriage can be the greatest source of happiness or pain in one's life, depending on the relationship. All marriages are not alike and the same marriage between two people may change through the years. Below we will look at how satisfaction with marriage is affected by the life cycle and two ways to characterizing marriages.

Marital Satisfaction and the Life Cycle

Marital satisfaction has peaks and valleys during the course of the life cycle. Rates of happiness tend to be highest in the years prior to the birth or adoption of a first child. It hits a low point with the coming of children (recall Attachment Theory and that effective

care-giving requires a lot of focus on the children). Then, it begins to improve as children grow and again when they leave home. Children bring new expectations to the marital relationship. Two people, who are comfortable with their roles as partners, may find the added parental/caregiver duties and expectations more challenging to meet. Some couples elect not to have children in order to have more time and resources for the marriage. These child-free couples are happy keeping their time and attention on their partners, careers, and interests.

One way marriages vary is with regard to the reason the partners are married. Some marriages have **intrinsic** value: the partners are together because they enjoy, love and value one another. Marriage is not thought of as a means to another end-is an end in itself. These partners look for someone they are drawn to and with whom they feel a close and intense relationship. These partners find the relationship personally rewarding. Other marriages called **utilitarian marriages** are unions entered primarily for practical reasons. The partners see one another as a means to an end. The marriage may bring financial security, children, social approval, housekeeping, political favor, a good car, a great house, and so on. These partners do not focus on intimacy. These marriages may be chosen more out of default. ("This person was there when it was time to get married so here we are.") Marriages entered for practical reasons are more common throughout history and throughout the world. Intrinsic marriages are a relatively recent phenomenon arising out of the 20th century focus on romantic love as a basis for marriage and increased independence of the partners. Marriage today is viewed as less necessary for economic survival. In general, utilitarian marriages tend to be more stable than intrinsic ones. In an intrinsic marriage, if the love or passion cools, there is nothing else to keep the partners together. In utilitarian marriages, there may be numerous ties to one another (children, property, and status). However, intrinsic marriages may be more romantically satisfying. Are most marriages intrinsic or utilitarian? In reality, marriages fall somewhere in between these two extremes.

Marital Communication

Advice on how to improve one's marriage is centuries old. One of today's experts on marital communication is John Gottman. Gottman (1999) differs from many marriage counselors in his belief that having a strong marriage does not depend on compatibility. Rather, the way that partners communicate with one another is crucial. At the University of Washington in Seattle, Gottman has measured the physiological responses of thousands of couples as they discuss issues of disagreement. Fidgeting in one's chair, leaning closer to or further away from the partner while speaking, increases in respiration and heart rate are all recorded and analyzed along with videotaped recordings of the partners' exchanges. Gottman believes he can accurately predict whether or not a couple will stay together by analyzing their communication. In marriages destined to fail, partners engage in the "marriage killers": contempt, criticism, defensiveness, and stonewalling. Each of these undermines the politeness and respect that healthy marriages require. And stonewalling, or shutting someone out, is the strongest sign that a relationship is destined to fail.



Figure 9.4.2 (Unsplash license; [Eric Ward](#) via [Unsplash](#))

Divorce

One way to understand divorce is to look at the types of divorces people experience when a relationship ends. Dissolution of marriage can be emotionally charged and complex because at least six processes happen all at the same time with varying intensities. These processes can be painful and confusing. The six overlapping "stations" are:

The **emotional divorce**. This involves a lot of mini-divorces in which partners make alienating remarks to one another. Partners become disengaged from one another and emotionally withdrawn. Some couples divorce emotionally, but not legally.

The **legal divorce** involves court proceedings and negotiations that legally dissolve the partners' marital ties to one another. This is when society views a couple as divorced and may be a process that is somewhat anticlimactic. The actual time spent in the courtroom may be brief and the final culmination of much of what has occurred in the other stations of divorce.

The **economic divorce** involves the division of property and debt, determining whether alimony will be paid, and determining if a spouse who provided support while their partner was in school or other lengthy training that increased their earning potential will be entitled to future earnings. Sometimes custody battles are motivated by economic concerns.

The **co-parental divorce** is experienced by those couples who have children together. Determining custody and visitation are part of this station of divorce. This can be the most difficult station of divorce.

The **community divorce** is perhaps given the least attention when thinking of divorce. This involves severing ties with neighbors, coworkers, friends, and relatives following divorce. When family and friends choose sides in a break-up, relationships are lost. Divorced adults may find that they are no longer included in events and ties are no longer maintained. A person begins to get used to their single status. This may initially involve a sense of anxiety about the future.

The **psychic divorce** takes the longest to complete. This involves grieving, becoming more objective about one's role in the break up, and feeling whole again as a single person. This transition may take 5 years or more. Many people never complete this because they remarry before getting to this point.

Middle Adults Returning to Education

Midlife adults in the United States often find themselves in college classrooms. In fact, the rate of enrollment for older Americans entering college, often part-time or in the evenings, is rising faster than traditionally aged students. Students over age 35 are expected to comprise 19% of all college and graduate students by 2020 (Holland, 2014). In some cases, older students are developing skills and expertise in order to launch a second career, or to take their career in a new direction. Whether they enroll in school to sharpen particular skills, to retool and reenter the workplace, or to pursue interests that have previously been neglected, older students tend to approach the learning process differently than younger college students (Knowles, Holton, & Swanson, 1998).

The mechanics of cognition, such as working memory and speed of processing, gradually decline with age. However, they can be easily compensated for through the use of higher order cognitive skills, such as forming strategies to enhance memory or summarizing and comparing ideas rather than relying on rote memorization (Lachman, 2004).



Figure 9.4.2: "Use it or lose it" applies to mind and body. (Pexels license; [Andrea Piacquadio](#) via [Pexels](#))

Although older students may take a bit longer to learn material, they are less likely to forget it quickly. Adult learners tend to look for relevance and meaning when learning information. Older adults have the hardest time learning material that is meaningless or unfamiliar. They are more likely to ask themselves, "Why is this important?" when being introduced to information or when trying to memorize concepts or facts. Older adults are more task-oriented learners and want to organize their activity around problem-solving. However, these differences may decline as new generations, equipped with higher levels of education, begin to enter midlife.

To address the educational needs of those over 50, The American Association of Community Colleges (2016) developed the **Plus 50 Initiative** that assists community colleges in creating or expanding programs that focus on workforce training and new careers

for the plus-50 population. Since 2008 the program has provided grants for programs to 138 community colleges affecting over 37,000 students. The participating colleges offer workforce training programs that prepare 50 plus adults for careers in such fields as early childhood educators, certified nursing assistants, substance abuse counselors, adult basic education instructors, and human resources specialists. These training programs are especially beneficial as 80% of people over the age of 50 say they will retire later in life than their parents/caregivers or continue to work in retirement, including in a new field.

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9.5: Cognitive Development in Middle Adulthood

Having, hopefully, achieved and even moved beyond formal operational thinking before reaching midlife, is there anything left to be gained during middle age? Or are we merely striving to maintain normal function as age starts to impact us? Is middle age a time of unique psychosocial challenges and cognitive losses? Or do the years empower us with wisdom and new abilities?

Formal Operational and Postformal Intelligence

As discussed previously, adults tend to think in more practical terms than do adolescents. Although they may be able to use abstract reasoning when they approach a situation and consider possibilities, they are more likely to think practically about what is likely to occur.

Midlife adults in the United States often find themselves in classrooms. Whether they enroll in school to sharpen particular skills, to retool and reenter the workplace, or to pursue interests that have previously been neglected, these students tend to approach learning differently than do younger college students (Knowles, Horton, & Swanson, 1998).

An 18-year-old college student may focus more on rote memorization in studying for tests. They may be able to memorize information more quickly than an older student, but not have as thorough a grasp on the meaning of that information. Older students may take a bit longer to learn material, but are less likely to forget it quickly. Adult learners tend to look for relevance and meaning when learning information. Older adults have the hardest time learning material that is meaningless or unfamiliar. They are more likely to ask themselves, "What does this mean?" or "Why is this important?" when being introduced to information. Older adults are more task-oriented learners and want to organize their activity around problem-solving. They see the instructor as a resource person rather than the "expert" and appreciate having their life experience recognized and incorporated into the material being covered.

Brain Functioning

The brain, at midlife, has been shown to not only maintain many of the abilities of young adults, but also gain new ones. Some individuals in middle age actually have improved cognitive functioning (Phillips, 2011). The brain continues to demonstrate plasticity and rewires itself in middle age based on experiences. Research has demonstrated that older adults use more of their brains than younger adults. In fact, older adults who perform the best on tasks are more likely to demonstrate bilateralization than those who perform worst. Additionally, the amount of white matter in the brain, which is responsible for forming connections among neurons, increases into the 50s before it declines.

Emotionally and psychologically, the middle-aged brain is calmer, less neurotic, more capable of  managing emotions, and better able to negotiate social situations (Phillips, 2011). Older

adults tend to focus more on positive information and less on negative information than those younger. In fact, they also remember positive images better than those younger. Additionally, the older adult's amygdala responds less to negative stimuli. Lastly, adults in middle adulthood tend to make better financial decisions, which seems to peak at age 53, and show better economic understanding. Although greater cognitive variability occurs among middle adults when compared to those both younger and older, those in midlife with cognitive improvements tend to be more physically, cognitively, and socially active.

Plasticity of Intelligence

There are many new ideas about intelligence in adulthood. One is that it has **plasticity**; it can be shaped by experience. In fact, there is new evidence that mental exercise or training can have lasting benefits (National Institutes of Health, 2007). Another is that intelligence both increases and decreases throughout adulthood (it is multidirectional) and that individuals vary greatly in their intellectual abilities depending on their experiences. Much of the research on cognition and aging has been focused on comparing young and old adults and assuming that midlife adults fall somewhere in between. But some abilities improve during midlife. This new information is very important because it can help us break out of stereotypic thinking that aging brings a decline in mental ability. The fact is, most significant declines do not exist unless comparisons are being made between 20 year-olds and 80 year-olds.

Gaining Expertise: The Novice and the Expert

Quote: “The person who views the world at fifty the same as they did at twenty has wasted thirty years of their life.” -Muhammad Ali

Middle-aged adults, with their store of knowledge and experience, are likely to find that when faced with a problem, they have likely faced something similar before. This allows them to ignore the irrelevant and focus on the important aspects of the issue. Expertise is one reason why many people often reach the top of their career in middle adulthood. **Expertise** refers to specialized skills and knowledge that pertain to a particular topic or activity. In contrast, a **novice** is someone who has limited experiences with a particular task. Everyone develops some level of “selective” expertise in things that are personally meaningful to them, such as gardening, Salsa dancing, computer gaming, or diagnosing illness. Expert thought is often characterized as intuitive, automatic, strategic, and flexible.

- **Intuitive:** Novices follow particular steps and rules when problem solving, whereas experts can call upon a vast amount of knowledge and past As a result, their actions appear more intuitive than formulaic. A novice cook may slavishly follow the recipe step by step, while a chef may glance at recipes for ideas and then follow their own procedure.
- **Automatic:** Complex thoughts and actions become more routine and reactions appear instinctive over time. This is because expertise allows us to process information faster and more effectively (Crawford & Channon, 2002).

Expertise takes time. It is a long-process resulting from experience and practice (Ericsson, Feltovich, & Prietula, 2006). However, expertise cannot fully make-up for some of the losses in general cognitive functioning as we age. The superior performance of older adults in comparison to younger novices appears to be task specific (Charness & Krampe, 2006). As we age, we also need to be more deliberate in our practice of skills in order to maintain them. Charness and Krampe (2006) in their review of the literature on aging and expertise, also note that the rate of return for our effort diminishes as we age. In other words, increasing practice does not recoup the same advances in older adults as similar efforts do at younger ages.

Crystallized versus Fluid Intelligence

Intelligence is influenced by heredity, culture, social contexts, personal choices, and certainly age. One distinction in specific intelligences noted in adulthood, is between **fluid intelligence**, which refers to the capacity to learn new ways of solving problems and performing activities quickly and abstractly, and **crystallized intelligence**, which refers to the accumulated knowledge of the world we have acquired throughout our lives (Salthouse, 2004). These intelligences are distinct, and crystallized intelligence increases with age, while fluid intelligence tends to decrease with age (Horn, Donaldson, & Engstrom, 1981; Salthouse, 2004).

Research demonstrates that older adults have more crystallized intelligence as reflected in semantic knowledge, vocabulary, and language. As a result, middle-aged adults generally outperform younger people on measures of history, geography, and even on crossword puzzles, where this information is useful (Salthouse, 2004). It is this superior knowledge, combined with a slower and more complete processing style, along with a more sophisticated understanding of the workings of the world around them, that gives older adults the advantage of “wisdom” over the advantages of fluid intelligence which favor the young (Baltes, Staudinger, & Lindenberger, 1999; Scheibe, Kunzmann, & Baltes, 2009).

The differential changes in crystallized versus fluid intelligence help explain why older adults do not necessarily show poorer performance on tasks that also require experience (i.e., crystallized intelligence), although they show poorer memory overall. A young chess player may think more quickly, for instance, but a more experienced chess player has more knowledge to draw on.

Seattle Longitudinal Study: The Seattle Longitudinal Study has tracked the cognitive abilities of adults since 1956. Every seven years the current participants are evaluated and new individuals are also added. Approximately 6,000 people have participated thus far. Current results demonstrate that middle-aged adults perform better on four out of six cognitive tasks than those same individuals did when they were young adults. Verbal memory, spatial skills, inductive reasoning (generalizing from particular examples), and vocabulary increase with age until one's 70s (Schaie, 2005; Willis & Schaie, 1999).

Cognitive skills in the aging brain have been studied extensively in pilots, and similar to the Seattle Longitudinal Study results, older pilots show declines in processing speed and memory capacity, but their overall performance seems to remain intact. According to Phillips (2011) researchers tested pilots age 40 to 69 as they performed on flight simulators. Older pilots took longer to learn to use the simulators, but performed better than younger pilots at avoiding collisions.

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9.6: Physical Development in Middle Adulthood



There are few biologically based physical changes in midlife other than changes in vision, more joint pain, and weight gain (Lachman, 2004). While we gain weight, we lose height. And aging changes our body shape. [As summarized in a MedlinePlus article:](#)

Your body shape changes naturally as you age. You cannot avoid some of these changes, but your lifestyle choices may slow or speed the process.

The human body is made up of fat, lean tissue (muscles and organs), bones, and water. After age 30, people tend to lose lean tissue. Your muscles, liver, kidney, and other organs may lose some of their cells. This process of muscle loss is called atrophy. Bones may lose some of their minerals and become less dense (a condition called osteopenia in the early stages and osteoporosis in the later stages). Tissue loss reduces the amount of water in your body.

The amount of body fat goes up steadily after age 30. Older people may have almost one third more fat compared to when they were younger. Fat tissue builds up toward the center of the body, including around the internal organs. However, the layer of fat under the skin gets smaller.

The tendency to become shorter occurs among all races and both sexes. Height loss is related to aging changes in the bones, muscles, and joints. People typically lose almost one-half inch (about 1 centimeter) every 10 years after age 40. Height loss is even more rapid after age 70. You may lose a total of 1 to 3 inches (2.5 to 7.5 centimeters) in height as you age. You can help prevent height loss by following a healthy diet, staying physically active, and preventing and treating bone loss.

Vision is affected by age. As we age, the lens of the eye gets larger but the eye loses some of the flexibility required to adjust to visual stimuli. Middle aged adults often have trouble seeing up close as a result. Night vision is also affected as the pupil loses some of its ability to open and close to accommodate drastic changes in light. Autoimmune disease such as rheumatoid arthritis often starts in the 50s. Weight gain, sometimes referred to as the middle-aged spread, or the accumulation of fat in the abdomen is one of the common complaints of midlife adults. Men tend to gain fat on their upper abdomen and back while women tend to gain more fat on their waist and upper arms. Many adults are surprised at this weight gain because their diets have not changed. However, the metabolism slows during midlife by about one-third (Berger, 2005). Consequently, midlife adults have to increase their level of exercise, eat less, and watch their nutrition to maintain their earlier physique.

Hearing loss is experienced by about 14 percent of midlife adults (Gratton & Vasquez in Berk, 2007) as a result of being exposed to high levels of noise. Men may experience some hearing loss by 30 and women by 50. High frequency (high pitched) sounds are the first affected by such hearing loss. This loss accumulates after years of being exposed to intense noise levels. Men are more likely to work in noisy occupations. Hearing loss is also exacerbated by cigarette smoking, high blood pressure, and stroke. Most hearing loss could be prevented by guarding against being exposed to extremely noisy environments. (There is new concern over hearing loss in early adulthood with the widespread use of headphones for iPods and other similar devices.)

Most of the changes that occur in midlife can be easily compensated for (by buying glasses, exercising, and watching what one eats, for example.) And most midlife adults experience general good health. However, the percentage of adults who have a disability increases through midlife; while 7 percent of people in their early 40s have a disability, the rate jumps to 30 percent by the early 60s. This increase is highest among those of lower socioeconomic status (Bumpass and Aquilino, 1995).

What can we conclude from this information? Again, lifestyle has a strong impact on the health status of midlife adults. Smoking tobacco, drinking alcohol, poor diet, stress, physical inactivity, and chronic disease such as diabetes or arthritis reduce overall health. It becomes important for midlife adults to take preventative measures to enhance physical well-being. Those midlife adults who have a strong sense of mastery and control over their lives, who engage in challenging physical and mental activity, who engage in weight bearing exercise, monitor their nutrition, and make use of social resources are most likely to enjoy a plateau of good health through these years (Lachman, 2004).

The Climacteric

One biologically based change that occurs during midlife is the climacteric. During midlife, men may experience a reduction in their ability to reproduce. Women, however, lose their ability to reproduce once they reach menopause.

Menopause for women: Menopause refers to a period of transition in which a woman's ovaries stop releasing eggs and the level of estrogen and progesterone production decreases. After menopause, a woman's menstruation ceases (U. S. National Library of Medicine and National Institute of Health [NLM/NIH], 2007).

Changes typically occur between the mid 40s and mid 50s. The median age range for a woman to have her last menstrual period is 50-52, but ages vary. A woman may first begin to notice that her periods are more or less frequent than before. These changes in menstruation may last from 1 to 3 years. After a year without menstruation, a woman is considered menopausal and no longer capable of reproduction. (Keep in mind that some women, however, may experience another period even after going for a year without one.) The loss of estrogen also affects vaginal lubrication which diminishes and becomes more watery. The vaginal wall also becomes thinner, and less elastic.

Menopause is not seen as universally distressing (Lachman, 2004). Changes in hormone levels are associated with hot flashes and sweats in some women, but women vary in the extent to which these are experienced. Depression, irritability, and weight gain are not menopausal (Avis, 1999; Rossi, 2004). Depression and mood swings are more common during menopause in women who have prior histories of these conditions rather than those who have not. And the incidence of depression and mood swings is not greater among menopausal women than non-menopausal women.

Cultural influences seem to also play a role in the way menopause is experienced. Numerous international students enrolled in my class have expressed their disbelief when we discuss menopause. For example, after listing the symptoms of menopause, a woman from Kenya or Nigeria might respond, "We do not have this in my country or if we do, it is not a big deal" to which some U. S. students reply, "I want to go there!" Indeed, there are cultural variations in the experience of menopausal symptoms. Hot flashes are experienced by 75 percent of women in Western cultures, but by less than 20 percent of women in Japan (Obermeyer in Berk, 2007).

Women in the United States respond differently to menopause depending upon the expectations they have for themselves and their lives. White, career-oriented women, African-American, and Mexican-American women overall tend to think of menopause as a liberating experience. Nevertheless, there has been a popular tendency to erroneously attribute frustrations and irritations expressed by women of menopausal age to menopause and thereby not take her concerns seriously. Fortunately, many practitioners in the United States today are normalizing rather than pathologizing menopause.

Concerns about the effects of hormone replacement has changed the frequency with which estrogen replacement and hormone replacement therapies have been prescribed for menopausal women. Estrogen replacement therapy was once commonly used to treat menopausal symptoms. But more recently, hormone replacement therapy has been associated with breast cancer, stroke, and the development of blood clots (NLM/NIH, 2007). Most women do not have symptoms severe enough to warrant estrogen or hormone replacement therapy. But if so, they can be treated with lower doses of estrogen and monitored with more frequent breast and pelvic exams. There are also some other ways to reduce symptoms. These include avoiding caffeine and alcohol, eating soy, remaining sexually active, practicing relaxation techniques, and using water-based lubricants during intercourse.

Andropause for men: Do males experience a climacteric? They do not lose their ability to reproduce as they age, although they do tend to produce lower levels of testosterone and fewer sperm. However, men are capable of reproduction throughout life. It is natural for sex drive to diminish slightly as men age, but a lack of sex drive may be a result of extremely low levels of testosterone. About 5 million men experience low levels of testosterone that results in symptoms such as: a loss of interest in sex, loss of body hair, difficulty achieving or maintaining erection, loss of muscle mass, and breast enlargement. Low testosterone levels may be due to glandular disease such as testicular cancer. Testosterone levels can be tested and if they are low, men can be treated with testosterone replacement therapy. This can increase sex drive, muscle mass, and beard growth. However, long term HRT for men can increase the risk of prostate cancer (The Patient Education Institute, 2005).

The Climacteric and Sexuality

Sexuality is an important part of people's lives at any age. Midlife adults tend to have sex lives that are very similar to that of younger adulthood. And many women feel freer and less inhibited sexually as they age. However, a woman may notice less vaginal lubrication during arousal and men may experience changes in their erections from time to time. This is particularly true for men after age 65. As discussed in the previous paragraph, men who experience consistent problems are likely to have medical conditions (such as diabetes or heart disease) that impact sexual functioning (National Institute on Aging, 2005).

Couples continue to enjoy physical intimacy and may engage in more foreplay, oral sex, and other forms of sexual expression rather than focusing as much on sexual intercourse. Risk of pregnancy continues until a woman has been without menstruation for at least 12 months, however, and couples should continue to use contraception. People continue to be at risk of contracting sexually transmitted infections such as genital herpes, chlamydia, and genital warts. And 10 percent of new cases of AIDS in the United States are of people 50 and older. Practicing safe sex is important at any age. Hopefully, when partners understand how aging affects sexual expression, they will be less likely to misinterpret these changes as a lack of sexual interest or displeasure in the partner and more able to continue to have satisfying and safe sexual relationships.

Exercise, Nutrition, and Health

The impact of exercise: Exercise is a powerful way to combat the changes we associate with aging. Exercise builds muscle, increases metabolism, helps control blood sugar, increases bone density, and relieves stress. Unfortunately, fewer than half of midlife adults exercise and only about 20 percent exercise frequently and strenuously enough to achieve health benefits. Many stop exercising soon after they begin an exercise program-particularly those who are very overweight. The best exercise programs are those that are engaged in regularly-regardless of the activity. But a well-rounded program that is easy to follow includes walking and weight training. Having a safe, enjoyable place to walk can make the difference in whether or not someone walks regularly. Weight lifting and stretching exercises at home can also be part of an effective program. Exercise is particularly helpful in reducing stress in midlife. Walking, jogging, cycling, or swimming can release the tension caused by stressors. And learning relaxation techniques can have healthful benefits. Exercise can be thought of as preventative health care; promoting exercise for the 78 million "baby boomers" may be one of the best ways to reduce health care costs and improve quality of life (Shure & Cahan, 1998).

Nutritional concerns: Aging brings about a reduction in the number of calories a person requires. Many Americans respond to weight gain by dieting. However, eating less does not typically mean eating right and people often suffer vitamin and mineral deficiencies as a result. Very often, physicians will recommend vitamin supplements to their middle aged patients.

The new food pyramid: The ideal diet is one low in fat, sugar, high in fiber, low in sodium, and cholesterol. In 2005, the Food Pyramid, a set of nutritional guidelines established by the U. S. Government was updated to accommodate new information on nutrition and to provide people with guidelines based on age, sex, and activity levels.

The ideal diet is also one low in sodium (less than 2300 mg per day). Sodium causes fluid retention which may in turn exacerbate high blood pressure. The ideal diet is also low in cholesterol (less than 300 mg per day). The ideal diet is also one high in fiber. Fiber is thought to reduce the risk of certain cancers and heart disease. Finally, an ideal diet is low in sugar. Sugar is not only a problem for diabetics; it is also a problem for most people. Sugar satisfies the appetite but provides no protein, vitamins or minerals. It provides empty calories. High starch diets are also a problem because starch is converted to sugar in the body. A 1-2 ounce serving of red wine (or grape juice) can have beneficial effects as well. Red wine can increase "good cholesterol" or HDLs (high density lipoproteins) in the blood and provides antioxidants important to combating aging.

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9.7: Health Concerns

Heart Disease: According to the most recent National Vital Statistics Reports (Heron, 2019) heart disease continues to be the number one cause of death for Americans as it claimed 23% of those who died in 2017. It is also the number one cause of death worldwide (World Health Organization, 2013). Heart disease develops slowly over time and typically appears in midlife (Hooker & Pressman, 2016).

Heart disease can include heart defects and heart rhythm problems, as well as narrowed, blocked, or stiffened blood vessels referred to as cardiovascular disease. The blocked blood vessels prevent the body and heart from receiving adequate blood. **Atherosclerosis**, or a buildup of fatty plaque in the arteries, is the most common cause of cardiovascular disease. The plaque buildup thickens the artery walls and restricts the blood flow to organs and tissues. Cardiovascular disease can lead to a heart attack, chest pain (angina), or stroke (Mayo Clinic, 2014a). Figure 8.5 illustrates atherosclerosis.

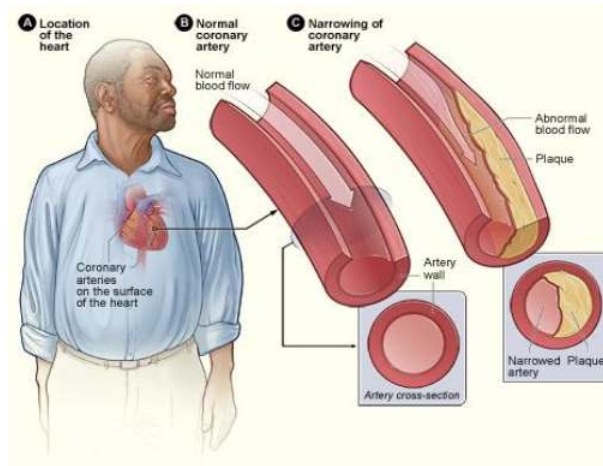


Figure 9.7.1: Atherosclerosis. Source.

Symptoms of cardiovascular disease differ for men and women. Males are more likely to suffer chest pain, while women are more likely to demonstrate shortness of breath, nausea, and extreme fatigue. Symptoms can also include pain in the arms, legs, neck, jaw, throat, abdomen or back (Mayo Clinic, 2014a).

According to the Mayo Clinic (2014a) there are many risk factors for developing heart disease, including medical conditions, such as high blood pressure, high cholesterol, diabetes, and obesity. Other risk factors include:

- **Advanced Age**-increased risk for narrowed arteries and weakened or thickened heart muscle.
- **Sex**-males are at greater risk, but a female's risk increases after menopause.
- **Family History**-increased risk, especially if male parent or brother developed heart disease before age 55 or female parent or sister developed heart disease before age 65.
- **Smoking**-nicotine constricts blood vessels and carbon monoxide damages the inner lining.
- **Poor Diet**-a diet high in fat, salt, sugar, and cholesterol.
- **Stress**-unrelieved stress can damage arteries and worsen other risk factors.
- **Poor Hygiene**-establishing good hygiene habits can prevent viral or bacterial infections that can affect the heart. Poor dental care can also contribute to heart disease.

Complications of heart disease can include heart failure, when the heart cannot pump enough blood to meet the body's needs, and a heart attack, when a blood clot blocks the blood flow to the heart. This blockage can damage or destroy a part of the heart muscle, and atherosclerosis is a factor in a heart attack. Treatment for heart disease includes medication, surgery, and lifestyle changes including exercise, healthy diet, and refraining from smoking.

Sudden cardiac arrest is the unexpected loss of heart functioning, breathing, and consciousness, often caused by an arrhythmia or abnormal heartbeat. The heart beat may be too quick, too slow, or irregular. With a healthy heart, it is unlikely for a fatal arrhythmia

to develop without an outside factor, such as an electric shock or illegal drugs. If not treated immediately, sudden cardiac arrest can be fatal and result in sudden cardiac death.

Hypertension, or *high blood pressure*, is a serious health problem that occurs when the blood flows with a greater force than normal. One in three American adults (70 million people) have hypertension and only half have it under control (Nwankwo, Yoon, Burt, & Gu, 2013). It can strain the heart, increase the risk of heart attack and stroke, or damage the kidneys (CDC, 2014a). Uncontrolled high blood pressure in early and middle adulthood can also damage the brain's white matter (axons), and may be linked to cognitive problems later in life (Maillard et al., 2012). Normal blood pressure is under 120/80 (Table 8.1). The first number is the **systolic pressure**, which is the pressure in the blood vessels when the heart beats. The second number is the **diastolic pressure**, which is the pressure in the blood vessels when the heart is at rest. High blood pressure is sometimes referred to as the *silent killer*, as most people with hypertension experience no symptoms.

Table 9.7.1 Blood Pressure Levels

	Systolic Pressure	Diastolic Pressure
Normal	Under 120	Under 80
Prehypertension (at risk)	20-139	80-89
Hypertension	140 or high	90 or higher

Source: adapted from CDC (2014c).

Risk factors for high blood pressure include:

- Family history of hypertension
- Diet that is too high in sodium, often found in processed foods, and too low in potassium
- Sedentary lifestyle
- Obesity
- Too much alcohol consumption
- Tobacco use, as nicotine raises blood pressure (CDC, 2014b).

Making lifestyle changes can often reduce blood pressure in many people.

Cancer: After heart disease, cancer was the second leading cause of death for Americans in 2017 as it accounted for 21.3% of all deaths (Heron, 2019). According to the National Institutes of Health (2015), **cancer** is the name given to a collection of related diseases in which the body's cells begin to divide without stopping and spread into surrounding tissues. These extra cells can divide and form growths called tumors, which are typically masses of tissue. Cancerous tumors are malignant, which means they can invade nearby tissues. When removed malignant tumors may grow back. Unlike malignant tumors, benign tumors do not invade nearby tissues. Benign tumors can sometimes be quite large, and when removed usually do not grow back. Although benign tumors in the body are not cancerous, benign brain tumors can be life threatening.

Cancer cells can prompt nearby normal cells to form blood vessels that supply the tumors with oxygen and nutrients, which allows them to grow. These blood vessels also remove waste products from the tumors. Cancer cells can also hide from the immune system, a network of organs, tissues, and specialized cells that protects the body from infections and other conditions. Lastly, cancer cells can metastasize, which means they can break from where they first formed, called the primary cancer, and travel through the lymph system or blood to form new tumors in other parts of the body. This new metastatic tumor is the same type as the primary tumor (National Institutes of Health, 2015). Figure 9.7.2 illustrates how cancers can metastasize.

Cancer can start almost anywhere in the human body. While normal cells mature into very distinct cell types with specific functions, cancer cells do not and continue to divide without stopping. Further, cancer cells are able to ignore the signals that normally tell cells to stop dividing or to begin a process known as programmed cell death which the body uses to get rid of unneeded cells. With the growth of cancer cells, normal cells are crowded out and the body is unable to work the way it is supposed to. For example, the cancer cells in lung cancer form tumors which interfere with the functioning of the lungs and how oxygen is transported to the rest of the body.

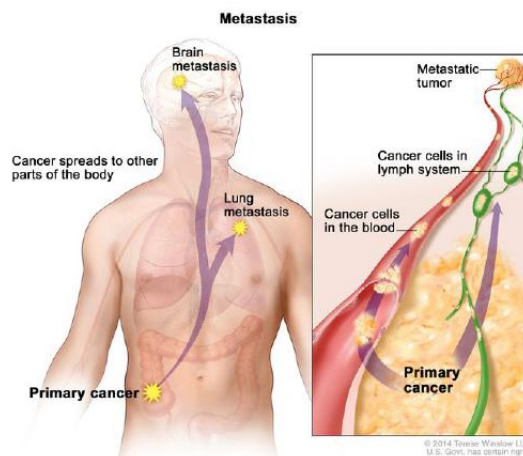


Figure 9.7.2 Source.

There are more than 100 types of cancer. The American Cancer Society assembles a list of the most common types of cancers in the United States. To qualify for the 2016 list, the estimated annual incidence had to be 40,000 cases or more. The most common type of cancer on the list is breast cancer, with more than 249,000 new cases expected in 2016. The next most common cancers are lung cancer and prostate cancer. Table 8.2 lists the estimated number of new cases and deaths for each common cancer type (American Cancer Society, 2016).

Table 9.7.2 2016 Estimates of Cancer Types

Cancer Type	Estimated New Cases	Estimated Deaths
Bladder	76,960	16,390
Breast (Female - Male)	246,660 - 2,600	40,450 - 440
Colon and rectal (combined)	134,490	49,190
Endometrial	60,050	10,470
Kidney (renal cell and renal pelvis) cancer	62,700	14,420
Leukemia (all types)	60,140	24,400
Lung (including bronchus)	224,390	158,080
Melanoma	76,380	10,130
Non-Hodgkin Lymphoma	72,580	20,150
Pancreatic	53,070	41,780
Prostate	180,890	26,120
Thyroid	64,300	1,980

Source.

Cholesterol is a waxy fatty substance carried by lipoprotein molecules in the blood. It is created by the body to create hormones and digest fatty foods, and is also found in many foods. Your body needs cholesterol, but too much can cause heart disease and stroke. Two important kinds of cholesterol are **low-density lipoprotein (LDL)** and **high-density lipoprotein (HDL)**. A third type of fat is called **triglycerides**. Your total cholesterol score is based on all three types of lipids (Table 8.3). Total cholesterol is calculated by adding HDL plus LDL plus 20% of the Triglycerides.

Table 9.7.3: Normal Levels of Cholesterol

Normal	
Total Cholesterol	Less than 200 mg/dl*
LDL	Less than 100 mg/dl
HDL	40 mg/dl or higher
Triglycerides	Less than 150 mg/dl
*Cholesterol levels are measured in milligrams (mg) of cholesterol per deciliter (dL) in blood	

Source: Adapted from CDC (2015).

LDL cholesterol makes up the majority of the body's cholesterol, however, it is often referred to as "bad" cholesterol because at high levels it can form plaque in the arteries leading to heart attack and stroke. HDL cholesterol, often referred to as "good" cholesterol, absorbs cholesterol and carries it back to the liver, where it is then flushed from the body. Higher levels of HDL can reduce the risk of heart attack and stroke. Triglycerides are a type of fat in the blood used for energy. High levels of triglycerides can also increase your risk for heart disease and stroke when coupled with high LDL and low HDL. All adults 20 or older should have their cholesterol checked. In early adulthood, doctors may check every few years if the numbers have previously been normal, and there are no other signs of heart disease. In middle adulthood, this may become part of the annual check-up (CDC, 2015).

Risk factors for high cholesterol include: A family history for high cholesterol, diabetes, a diet high in saturated fats, trans fat, and cholesterol, physical inactivity, and obesity. Almost 32% of American adults have high LDL cholesterol levels, and the majority do not have it under control, nor have they made lifestyle changes (CDC, 2015).

Diabetes (Diabetes Mellitus) is a disease in which the body does not control the amount of glucose in the blood. This disease occurs when the body does not make enough insulin or does not use it the way it should (NIH, 2016a). Insulin is a type of hormone that helps glucose in the blood enter cells to give them energy. In adults, 90% to 95% of all diagnosed cases of diabetes are type 2 (American Diabetes Association (ADA), 2016). Type 2 diabetes usually begins with insulin resistance, a disorder in which the cells in the muscles, liver, and fat tissue do not use insulin properly (CDC, 2014d). As the need for insulin increases, cells in the pancreas gradually lose the ability to produce enough insulin. In some Type 2 diabetics, pancreatic beta cells will cease functioning, and the need for insulin injections will become necessary. Some people with diabetes experience insulin resistance with only minor dysfunction of the beta cell secretion of insulin. Other diabetics experience only slight insulin resistance, with the primary cause being a lack of insulin secretion (CDC, 2014d).



Figure 9.7.3 Source (CDC, 2014d).

One in three adults are estimated to have prediabetes, and 9 in 10 of them do not know. According to the CDC (2014d) without intervention, 15% to 30% of those with prediabetes will develop diabetes within 5 years. In 2012, 29 million people (over 9% of the population) were living with diabetes in America, mostly adults age 20 and up.

Table 9.7.4: Estimated Number and Percentage of Adults age 20 and over Living with Diabetes in 2012

	Number with Diabetes (millions)	Percentage with Diabetes (unadjusted)
Total		
20 years or older	28.9	12.3
By age		
20-44	4.3	4.1
45-64	13.4	16.2
65 years or older	11.2	25.9
By sex		
Men	15.5	13.6
Women	13.4	11.2
<i>Source: 2009-2012 National Health and Nutrition Examination Survey estimates applied to 2012 U.S. Census data.</i>		

Table 9.7.4 shows the numbers in millions and percentage of adults, by age and gender, living with diabetes. The median age of diagnosis is 54 (CDC, 2014d). During middle adulthood, the number of people with diabetes dramatically increases; with 4.3 million living with diabetes prior to age 45, to over 13 million between the ages of 45 to 64; a four-fold increase. Men are slightly more likely to experience diabetes than are women.

Diabetes also affects ethnic and racial groups differently. Non-Hispanic Whites (7.6%) are less likely to be diagnosed with diabetes than are Asian Americans (9%), Hispanics (12.8%), non-Hispanic Blacks (13.2%), and American Indians/Alaskan Natives (15.9%). However, these general figures hide the variations within these groups. For instance the rate of diabetes was less for Central, South, and Cuban Americans than for Mexican Americans and Puerto Ricans, and four times less for Alaskan Natives than the American Indians of southern Arizona (CDC, 2014d).

The risk factors for diabetes include:

- Those over age 45
- Obesity
- Family history of diabetes
- History of gestational diabetes (Chapter 2)
- Race and ethnicity
- Physical inactivity
- Diet

Diabetes has been linked to numerous health complications. Adults with diabetes are 1.7 times more likely to have cardiovascular disease, 1.8 times more likely to experience a heart attack, and 1.5 times more likely to experience stroke than adults without diabetes. Diabetes can cause blindness and other eye problems. In diabetics age 40 or older, 28.5% showed signs of diabetic retinopathy, *damage to the small blood vessels in the retina that may lead to loss of vision*. More than 4% showed advanced diabetic retinopathy. Diabetes is linked as the primary cause of almost half (44%) of new cases of kidney failure each year. About 60% of non-traumatic limb amputations occur in people with diabetes. Diabetes has been linked to hearing loss, tinnitus (ringing in the ears), gum disease, and neuropathy (nerve disease) (CDC, 2014d).

Typical tests for diabetes include a fasting glucose test and the A1C (Table 8.5). Fasting glucose levels should be under 100mg/dl (ADA, 2016). The A1C provides information about the average levels of blood glucose over the last 3 months (NIH, 2014a). The A1C should be under 5.7, where a 5.0 = 97mg/dl and a 6.0 = 126 mg/dl (ADA, 2016).

Rheumatoid arthritis (RA) is an inflammatory disease that causes pain, swelling, stiffness, and loss of function in the joints (NIH, 2016b). RA occurs when the immune system attacks the membrane lining the joints (Figure 8.8). **Metabolic Syndrome** is a cluster

of several cardiometabolic risk factors, including large waist circumference, high blood pressure, and elevated triglycerides, LDL, and blood glucose levels, which can lead to diabetes and heart disease (Crist et al., 2012). The prevalence of metabolic syndrome in the U.S. is approximately 34% and is especially high among Hispanics and African Americans (Ford, Li, & Zhao, 2010). Prevalence increases with age, peaking in one's 60s (Ford et al., 2010). Metabolic syndrome increases morbidity from cardiovascular disease and diabetes (Hu et al., 2004; Malik, 2004). Hu and colleagues found that even having one or two of the risk factors for metabolic syndrome increased the risk of mortality. Crist et al. (2012) found that increasing aerobic activity and reducing weight led to a drop in many of the risk factors of metabolic syndrome, including a reduction in waist circumference and blood pressure, and an increase in HDL cholesterol.

RA is the second most common form of arthritis after osteoarthritis, which is the normal wear and tear on the joints discussed in chapter 9. Unlike osteoarthritis, RA is symmetric in its attack of the body, thus, if one shoulder is affected so is the other. In addition, those with RA may experience fatigue and fever. Below are the common features of RA (NIH, 2016b).

Features of Rheumatoid Arthritis

- Tender, warm, swollen joints
- Symmetrical pattern of affected joints
- Joint inflammation *often* affecting the wrist and finger joints closest to the hand
- Joint inflammation *sometimes* affecting other joints, including the neck, shoulders, elbows, hips, knees, ankles, and feet
- Fatigue, occasional fevers, a loss of energy
- Pain and stiffness lasting for more than 30 minutes in the morning or after a long rest
- Symptoms that last for many years
- Variability of symptoms among people with the disease.

About 1.5 million people (approximately 0.6%) of Americans experience rheumatoid arthritis. It occurs across all races and age groups, although the disease often begins in middle adulthood and occurs with increased frequency in older people. Like some other forms of arthritis, rheumatoid arthritis occurs much more frequently in women than in men. About two to three times as many women as men have the disease (NIH, 2016b). The lifetime risk for RA for women is 3.6% and 1.7% for men (Crowson, et al., 2011).

Genes play a role in the development of RA. However, individual genes by themselves confer only a small risk of developing the disease, as some people who have these particular genes never develop RA. Scientists think that something must occur to trigger the disease process in people whose genetic makeup makes them susceptible to rheumatoid arthritis. For instance, some scientists also think hormonal factors may be involved. In women who experience RA, the symptoms may improve during pregnancy and flare after pregnancy. Women who use oral contraceptives may increase their likelihood of developing RA. This suggests hormones, or possibly deficiencies or changes in certain hormones, may increase the risk of developing RA in a genetically susceptible person (NIH, 2016b).

Rheumatoid arthritis can affect virtually every area of a person's life, and it can interfere with the joys and responsibilities of work and family life. Fortunately, current treatment strategies allow most people with RA to lead active and productive lives. Pain-relieving drugs and medications can slow joint damage, and establishing a balance between rest and exercise can also lessen the symptoms of RA (NIH, 2016b).

Digestive Issues

Heartburn, also called acid indigestion or pyrosis, is a common digestive problem in adults and is the result of stomach acid backing up into the esophagus. Prolonged contact with the digestive juices injures the lining of the esophagus and causes discomfort. Heartburn that occurs more frequently may be due to gastroesophageal reflux disease, GERD. Normally the lower sphincter muscle in the esophagus keeps the acid in the stomach from entering the esophagus. In GERD this muscle relaxes too frequently and the stomach acid flows into the esophagus. In the U.S. 60 million people experience heartburn at least once a month, and 15 million experience it every day. Prolonged problems with heartburn can lead to more serious complications, including esophageal cancer, one of the most lethal forms of cancer in the U.S. Problems with heartburn can be linked to eating fatty or spicy foods, caffeine, smoking, and eating before bedtime (American College of Gastroenterology, 2016a).

Gallstones are hard particles, including fatty materials, bile pigments, and calcium deposits, that can develop in the gallbladder. Ranging in size from a grain of sand to a golf ball, they typically take years to develop, but in some people have developed over the course of a few months. About 75% of gallstones do not create any symptoms, but those that do may cause sporadic upper abdominal pain when stones block bile or pancreatic ducts. If stones become lodged in the ducts, it may necessitate surgery or other medical intervention as it could become life-threatening if left untreated (American College of Gastroenterology, 2016b).

Gallstones are present in about 20% of women and 10% of men over the age of 55 (American College of Gastroenterology, 2016b). Risk factors include a family history of gallstones, diets high in calories and refined carbohydrates (such as, white bread and rice), diabetes, metabolic syndrome, Crohn's disease, and obesity, which increases the cholesterol in the bile and thus increases the risk of developing gallstones (NIH, 2013).

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Playing with the annoying headers...

SUBJECT – OER for Computer Information Systems (C-ID ITIS 120)

Lists to send on – BUSINESS, CIS, CIS_IS, COMPUTER SCIENCE (H1 in Word)

Greetings! This message is being sent by the ASCCC Open Educational Resources (OER) Initiative on behalf of a faculty member who is seeking colleagues to collaborate on OER for Computer Information Systems ([C-ID ITIS 120](#)). As the OERI requires that funded projects involve collaborators from at least three California Community College districts, we are assisting potential applicants who need collaborators. The need is described as follows:

Proposed Project Title: Introduction to Computer and Information Technologies (H2 in word)

There are very few high quality introduction to computers and information systems OER materials. Either the material is too advanced for an entry level computer information systems class, or it's too basic for a college level course. We hope to meet that need and are looking for additional faculty authors and reviewers to help us.

If you are interested in this opportunity or have any questions about it, please contact [Mark Branom](#). Please forward this message on to anyone who might be interested.

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CHAPTER OVERVIEW

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10.1: Late Adulthood - What Will You Learn?

After reading "Late Adulthood" you should be able to:

1. Differentiate between non-typical, typical, and optimal aging.
2. Identify examples of ageism.
3. Describe changes in the senses in late adulthood.
4. Describe theories of aging.
5. Define Hayflick Limit.
6. Evaluate previous ideas about aging and cognition based on new research.
7. Describe Erikson's psychosocial stage for late adulthood.
8. Contrast disengagement, activity, and continuity theories of aging.
9. Describe ways in which people are productive in late adulthood.
10. Explain the stages of aging.
11. Explain theoretical models of health, as well as the role of psychological stress in the development of disease.
12. Describe psychological factors that contribute to resilience and improved health.
13. Defend the relevance and importance of psychology to the field of medicine.



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10.2: Late Adulthood



Figure 10.2.1 (Unsplash license; [Vidar Nordli-Mathisen](#) via [Unsplash](#))

We are considered in late adulthood from the time we reach our mid-sixties until death. The number of Americans aged 65 and older is projected to more than double from about 46 million in 2018 to over 98 million by 2060, and the 65-and-older age group's share of the total population will rise to nearly 24 percent from 15 percent.

We are currently living in an aging society (Rowe, 2009). Because of increases in average life expectancy, each new generation can expect to live longer than their parents/caregivers generation and certainly longer than their grandparents' generation. As a consequence, it is time for individuals of all ages to rethink their personal life plans and consider prospects for a long life. When is the best time to start a family, if at all? Will the education gained up to age 20 be sufficient to cope with future technological advances and marketplace needs? What is the right balance between work, family, and leisure throughout life? What's the best age to retire? How can I age successfully and enjoy life to the fullest when I'm 80 or 90?

Developmentalists divide this population into categories with an "**optimal aging**" view. That is, exploring older adults through the lens of health and social well-being. Optimal aging refers to an individual's capacity to function across various domains—physical, functional, cognitive, emotional, social, and spiritual—to one's own satisfaction and acknowledges that people have different levels of these domains. The optimal aging lens honors this fact. "**Typical**" aging refers to those who seem to have the same health and social concerns as the median majority of those in the population. However, there is still much being done to understand exactly what "typical" aging means. **Non-typical aging** (formerly called impaired aging) refers to those who experience non-optimal health and dependence to a greater extent than would be considered typical. Aging "successfully" involves making adjustments as needed in order to continue living as independently and actively as possible. This is referred to as **selective optimization with compensation**. For example, a person who can no longer drive, is able to find alternative transportation. Or a person who is compensating for having less energy, learns how to reorganize their daily routine to avoid over-exertion. Perhaps nurses and other allied health professionals working with older adults will continue and strengthen the focus more on helping people remain independent than on simply treating illnesses. Promoting health and a person's sense of independence are vital for optimal aging.

Ageism and Abuse



Figure 10.2.2 (Unsplash license; [Nick Karvounis](#) via [Unsplash](#))

Ageism

Many media portrayals of older adults reflect negative cultural attitudes toward aging. In the United States, society tends to glorify youth and associate it with beauty and sexuality. In comedies, older adults are often associated with grumpiness, over-the-top silliness or senility meant to be "funny." Rarely do the roles of older people convey the fullness of life experienced by seniors—as employees, lovers, or the myriad roles they have in real life. What values does this reflect?

Ageism is discrimination (when someone acts on a prejudice) based on age and it exists in all cultures (Brownell, 2010). Ageist attitudes and biases based on stereotypes reduce older people to inferior or limited positions. Ageism happens when we believe in the stereotypes of older adulthood and treat people as though they are conforming to those stereotypes or as we expect them to conform to those stereotypes. Popular expressions like, "You can't teach an old dog new tricks," cause us to pass our 50th or 60th birthday thinking it is too late to start something new such as going back to college.

Stereotypes of people in late adulthood lead many to assume that aging automatically brings poor physical health and mental decline when these issues really fall on a spectrum depending on many factors about an individual, including the cumulative effects of how they treated their bodies in younger years. These stereotypes are reflected in everyday conversations, the media, and even in greeting cards (Overstreet, 2006). We have all seen the "over-the-hill" greeting cards that mock growing older starting at around age 40. Age is simply not revered in the United States, currently. The negative attitudes people have about those in late adulthood are examples of ageism, or prejudice based on age and it remains one of the most institutionalized forms of prejudice today. Nelson (2016) reviewed the research on ageism and concluded that when older individuals believed their culture's negative stereotypes about those who are old, their memory and cognitive skills declined. In contrast, older individuals in cultures, such as China, that held more positive views on aging did not demonstrate cognitive deficits. It appears that when one agrees with the stereotype, it becomes a self-fulfilling prophecy, or the belief in one's ability results in actions that make it come true.

Think about it: A lot of times in our society, older people can not help but feel left out or "out of it," not "cool", and behind-the-times. The message comes through clearly– "You have to be young to be okay" or you must be an older adult who is non-typical in some way (brilliant, rich, hilarious, etc.) to be considered valued. These messages also stifle the expectations of younger people regarding their own aging process. Many younger people today fear getting closer to their 50th or 60th birthdays and beyond, viewing ageing as a sad event.

One hindrance to society's fuller understanding of aging is that people rarely understand the process of aging until they reach older age themselves (as opposed to childhood, for instance, which we can all look back on). Therefore, myths and assumptions about older adults and aging are common. Many stereotypes exist surrounding the realities of being an older adult. While individuals often encounter stereotypes associated with race and gender and are thus more likely to think critically about them, many people just accept age stereotypes without question (Levy 2002).

You've likely seen online calculators that promise to determine your "real age" as opposed to your chronological age. These ads target the notion that people may "feel" a different age than their actual years. Some sixty-year-olds feel frail and elderly, while some eighty-year-olds feel sprightly. Equally revealing is that as people grow older they define "old age" in terms of greater years than their current age. Many people want to postpone old age and regard it as a phase that will never arrive. Some older adults even succumb to stereotyping their own age group (Rothbaum 1983) forgetting briefly that they are that exact age!

How do Stereotypes Effect Older Adults?

Today, wealth, power, and prestige are often held by those in younger age brackets. The average age of corporate executives was fifty-nine years old in 1980. In 2008, the average age had lowered to fifty-four years old and today, we see huge numbers of CEO's of Fortune 500 companies in their 30's and early 40's. This makes the stereotyped view of older adults in the career field (especially for aging women) as obsolete and out of touch with today's market by those younger. What are some potential implications of this? Being the target of stereotypes can adversely affect individuals' performance on tasks because they worry they will confirm those cultural stereotypes. This is known as stereotype threat, and it was originally used to explain race and gender differences in academic achievement (Gatz et al., 2016). Stereotype threat research has demonstrated that older adults who internalize aging stereotypes exhibit worse memory performance, worse physical performance, and reduced self-efficacy (Levy, 2009).



Figure 10.2.3: Are these street signs humorous or harmful? (Flickr license: Tumbleweed via Flickr)

Here's a story: Driving to the grocery store, Peter, 23 years old, got stuck behind a car on a four-lane main artery through his city's business district. The speed limit was 35 miles per hour, and while most drivers sped along at forty to forty-five mph, the driver in front of him was going the posted speed. Peter pressed on his horn. He then tailgated the driver in an attempt to get him to speed up. Finally, Peter had a chance to pass the car. He glanced over. Sure enough, Peter thought, a gray-haired old man guilty of "DWE," driving while elderly. At the grocery store, Peter waited in the checkout line behind an older woman. She carefully paid for her groceries, slowly lifted her bags of food into her cart, and shuffled slightly toward the exit. Peter, guessing her to be about eighty years old, was reminded of his grandmother. He paid for his groceries and caught up with her. "Here," he said, grabbing one of her bags without asking. "I can help you with your heavy grocery bags." "No, thank you. I can get it myself," she said and marched off toward her car.

Peter's responses to both older people, the driver and the shopper, were prejudiced. In both cases, he made unfair assumptions. He assumed the driver drove cautiously simply because the man was a senior citizen, and he assumed the shopper needed help carrying her groceries just because she was an older woman. Responses like Peter's toward older people are fairly common. He didn't intend to treat people differently based on personal or cultural biases, but he did.

Ageism can vary in severity, of course. Peter's attitudes are probably seen as somewhat mild, but relating to older adults in ways that are patronizing can be offensive and harmful. When ageism is reflected in the workplace, in healthcare, and in assisted-living facilities, the effects of discrimination can be more severe. Ageism can make older people fear losing a job, feel dismissed by a doctor, or feel a lack of power and control in their daily living situations.

In early societies, the elderly were respected and revered. Many preindustrial societies observed **gerontocracy**, a type of social structure wherein the power is held by a society's oldest members. In some countries today, the elderly still have influence and power and their vast knowledge is respected. Reverence for the elderly is still a part of some cultures, but it has changed in many places because of social factors.

In many modern nations, however, industrialization contributed to the diminished social standing of the elderly. Today wealth, power, and prestige are also held by those in younger age brackets. The average age of corporate executives was fifty-nine years old in 1980. In 2008, the average age had lowered to fifty-four years old (Stuart 2008). Some older members of the workforce felt threatened by this trend and grew concerned that younger employees in higher level positions would push them out of the job market. Rapid advancements in technology and media have required new skill sets that older members of the workforce are less likely to have.

Changes happened not only in the workplace but also at home. In agrarian societies, a married couple cared for their aging parents. The oldest members of the family contributed to the household by doing chores, cooking, and helping with child care. As economies shifted from agrarian to industrial, younger generations moved to cities to work in factories. The elderly began to be seen as an expensive burden. They did not have the strength and stamina to work outside the home. What began during industrialization, a trend toward older people living apart from their grown children, has become commonplace.

Mistreatment and Abuse

Mistreatment and abuse of the elderly is a major social problem. As expected, with the biology of aging, the elderly sometimes become physically frail. This frailty renders them dependent on others for care—sometimes for small needs like household tasks, and sometimes for assistance with basic functions like eating and toileting. Unlike a child, who also is dependent on another for care, an elder is an adult with a lifetime of experience, knowledge, and opinions—a more fully developed person. This makes the care-providing situation more complex.

Elder abuse occurs when a caretaker intentionally deprives an older person of care or harms the person in his or her charge. Caregivers may be family members, relatives, friends, health professionals, or employees of senior housing or nursing care. The elderly may be subject to many different types of abuse.

In a 2009 study on the topic led by Dr. Ron Acierno, the team of researchers identified five major categories of elder abuse: 1) physical abuse, such as hitting or shaking, 2) sexual abuse, including rape and coerced nudity, 3) psychological or emotional abuse, such as verbal harassment or humiliation, 4) neglect or failure to provide adequate care, and 5) financial abuse or exploitation (Acierno 2010).

The National Center on Elder Abuse (NCEA), a division of the U.S. Administration on Aging, also identifies abandonment and self-neglect as types of abuse. The table below shows some of the signs and symptoms that the NCEA encourages people to notice.

Signs of Elder Abuse. The National Center on Elder Abuse encourages people to watch for these signs of mistreatment. (Chart courtesy of National Center on Elder Abuse)

Type of Abuse	Signs and Symptoms
Physical abuse	Bruises, untreated wounds, sprains, broken glasses, lab findings of medication overdosage
Sexual abuse	Bruises around breasts or genitals, torn or bloody underclothing, unexplained venereal disease
Emotional/psychological abuse	Being upset or withdrawn, unusual dementia-like behavior (rocking, sucking)
Neglect	Poor hygiene, untreated bed sores, dehydration, soiled bedding
Financial	Sudden changes in banking practices, inclusion of additional names on bank cards, abrupt changes to will
Self-neglect	Untreated medical conditions, unclean living area, lack of medical items like dentures or glasses

How prevalent is elder abuse? Two recent U.S. studies found that roughly one in ten elderly people surveyed had suffered at least one form of elder abuse. Some social researchers believe elder abuse is underreported and that the number may be higher. The risk of abuse also increases in people with health issues such as dementia (Kohn and Verhoek-Oftedahl 2011). Older women were found to be victims of verbal abuse more often than their male counterparts.

In Acierno's study, which included a sample of 5,777 respondents age sixty and older, 5.2 percent of respondents reported financial abuse, 5.1 percent said they'd been neglected, and 4.6 endured emotional abuse (Acierno 2010). The prevalence of physical and sexual abuse was lower at 1.6 and 0.6 percent, respectively (Acierno 2010).

Other studies have focused on the caregivers to the elderly in an attempt to discover the causes of elder abuse. Researchers identified factors that increased the likelihood of caregivers perpetrating abuse against those in their care. Those factors include inexperience, having other demands such as jobs (for those who weren't professionally employed as caregivers), caring for children, living full-time with the dependent elder, and experiencing high stress, isolation, and lack of support (Kohn and Verhoek-Oftedahl 2011).

A history of depression in the caregiver was also found to increase the likelihood of elder abuse. Neglect was more likely when care was provided by paid caregivers. Many of the caregivers who physically abused elders were themselves abused—in many cases, when they were children. Family members with some sort of dependency on the elder in their care were more likely to

physically abuse that elder. For example, an adult child caring for an elderly parent while at the same time depending on some form of income from that parent, is considered more likely to perpetrate physical abuse (Kohn and Verhoek-Oftedahl 2011).

A survey in Florida found that 60.1 percent of caregivers reported verbal aggression as a style of conflict resolution. Paid caregivers in nursing homes were at a high risk of becoming abusive if they had low job satisfaction, treated the elderly like children, or felt burnt out (Kohn and Verhoek-Oftedahl, 2011). Caregivers who tended to be verbally abusive were found to have had less training, lower education, and higher likelihood of depression or other psychiatric disorders. Based on the results of these studies, many housing facilities for seniors have increased their screening procedures for caregiver applicants.



Figure 13.2.4 (Unsplash license; Bruno Aguirre via Unsplash)

Where Have the Multi-Generational Households Gone?

In the United States, the experience of being an older adult has changed greatly over the past century. In the late 1800s and early 1900s, large numbers of U.S. households were home to multi-generational families, and the experiences and wisdom of elders was respected. They offered wisdom and support to their children and often helped raise their grandchildren. In some countries today, older adults still have influence and power and their vast knowledge is respected. Multi-generational U.S. families began to decline after World War II, and their numbers reached a low point around 1980. But now, they are on the rise again. In fact, the number of Americans living in multi-generational family households have continued to rise, despite improvements in the U.S. economy since the Great Recession. In 2016, a record 64 million people, or 20% of the U.S. population, lived with multiple generations under one roof, according to a new Pew Research Center analysis of census data (<http://www.pewresearch.org/fact-tank...al-households/>).

Resources and Attributions

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10.3: Phases of Aging



Figure 10.3.1: Can you guess the ages of older adults you see out in public in your daily life? (Unsplash license; [SHIRAZ HENRY](#) via [Unsplash](#))

In modern U.S. society, appearance is not a reliable indicator of age. Hair dyes, Botox, and the like make traditional signs of aging increasingly unreliable. While enhancing our appearance can be personally rewarding for lots of reasons and is a very personal choice, how many older people try to look younger in order to feel more accepted in society? Why do we, as a society, shame the aging process and make attempts to hide the fact that we age? An old saying goes like this: "Do not complain about getting old. Some people are denied the privilege."

The Young-Old, Middle-Old, and Old-Old

In the United States, all people over eighteen years old are considered adults, but there is a large difference between a person who is 21 years old and a person who is 45 years old. More specific breakdowns, such as "young adult" and "middle-aged adult," are helpful. In the same way, groupings are helpful in understanding older adults who are often lumped together to include everyone over the age of 65. But a 65 year old's experience of life is much different from a 90 year old's.

The United States' older adult population can thus, be divided into three life-stage subgroups: the young-old (approximately 65 to 74 years old), the middle-old (ages 75 to 84 years old), and the old-old (over age 85). Today's young-old age group is generally happier, healthier, and financially better off than the young-old of previous generations.

In the United States, people are better able to prepare for aging because resources are more widely available. Many people are making proactive quality-of-life decisions about their old age while they are still young. In the past, family members made care decisions when an elderly person reached a health crisis, often leaving the elderly person with little choice about what would happen. Older adults are now better able to choose housing, for example, that allows them some independence while still providing care when it is needed. Living wills, retirement planning, and medical power of attorney are other concerns that are increasingly handled in advance.

Caring for the Aging around the World



Figure 10.3.2: Cultural values and attitudes can shape people's experience of aging. (Flickr license; Tom Coppen via Flickr)

As healthcare improves and life expectancy increases across the world, elder care will continue to be an expanding field. Worldwide, the expectation governing the amount and type of elder care varies from culture to culture. For example, in Asia the responsibility for elder care lies firmly on the family (Yap, Thang, and Traphagan, 2005). This is different from the approach in most Western countries. In the United States, by contrast, many people view caring for the elderly as a burden. Even when there is a family member able and willing to provide for an older family member, 60 percent of family caregivers are employed outside the home and are unable to provide the needed support. At the same time, however, many middle-class families are unable to bear the financial burden of "outsourcing" professional healthcare, resulting in gaps in care (Bookman and Kimbrel, 2011). It is important to note that even within the United States not all demographic groups treat aging the same way. While most people in the United States are reluctant to place their elderly members into out-of-home assisted care, demographically speaking, the groups least likely

to do so are Latinos, African Americans, and Asians (Bookman and Kimbrel, 2011) who tend to embrace the multi-generational household idea, which can benefit everyone in the home in numerous ways.

In 2002, the Second World Assembly on Aging was held in Madrid, Spain, resulting in the Madrid Plan, an internationally coordinated effort to create comprehensive social policies to address the needs of the worldwide aging population. The plan identifies three themes to guide international policy on aging: 1) publicly acknowledging the global challenges caused by, and the global opportunities created by, a rising global population; 2) empowering the elderly; and 3) linking international policies on aging to international policies on development (Zelenev, 2008).

The Madrid Plan has not yet been successful in achieving all its aims. However, it has increased awareness of the various issues associated with a global aging population, as well as raising the international consciousness to the way that the factors influencing the vulnerability of older adults (social exclusion, prejudice and discrimination, and a lack of socio-legal protection) overlap with other developmental issues (basic human rights, empowerment, and participation), leading to an increase in legal protections (Zelenev 2008).

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10.4: Theories of Aging

Biochemistry and Aging

There are a number of attempts to explain why we age and many factors that contribute to aging. Genetics, diet, lifestyle, activity, and exposure to pollutants all play a role in the aging process.

The Hayflick Limit

At the cell level, cells divide a limited number of times and then stop. This phenomenon, known as the Hayflick limit, is evidenced in cells studied in test tubes which divide about 50 times before becoming senescent. Senescent cells do not die. They simply stop replicating. Senescent cells can help limit the growth of other cells which may reduce the risk of developing tumors when younger, but can alter genes later in life and result in promoting the growth of tumors as we age (Dollemore, 2006). Limited cell growth is attributed to telomeres which are the tips of the protective coating around chromosomes. Each time cells replicate, the telomere is shortened. Eventually, loss of telomere length is thought to create damage to chromosomes and produce cell senescence.

Free Radical Theory

As we metabolize oxygen, mitochondria in the cells convert oxygen to adenosine triphosphate (ATP) which provides energy to the cell. Unpaired electrons are a by product of this process and these unstable electrons cause cellular damage as they find other electrons with which to bond. These free radicals have some benefits and are used by the immune system to destroy bacteria. However, cellular damage accumulates and eventually reduces functioning of organs and systems. Many food products and vitamin supplements are promoted as age-reducing. Antioxidant drugs have been shown to increase the longevity in nematodes (small worms), but the ability to slow the aging process by introducing antioxidants in the diet is still controversial.

Protein Crosslinking

The protein crosslinking theory focuses on the role blood sugar, or glucose, plays in the aging of cells. Glucose molecules attach themselves to proteins and form chains or crosslinks. These crosslinks reduce the flexibility of tissue and tissue become stiff and loses functioning. The circulatory system becomes less efficient as the tissue of the heart, arteries and lungs lose flexibility. And joints grow stiff as glucose combines with collagen. (To conduct your own demonstration of this process, take a piece of meat and place it in a hot skillet. The outer surface of the meat will caramelize and the tissue will become stiff and hard.)

DNA Damage

As we live, DNA is damaged by environmental factors such as toxic agents, pollutants, and sun exposure (Dollemore, 2006). This results in deletions of genetic material, and mutations in the DNA that is duplicated in new cells. The accumulation of these errors results in reduced functioning in cells and tissues.

Decline in the Immune System

As we age, B-lymphocytes and T- lymphocytes become less active. These cells are crucial to our immune system as they secrete antibodies and directly attack infected cells. The thymus, where T-cells are manufactured, shrinks as we age. This reduces our body's ability to fight infection (Berger, 2005).

Cognitive Aging

Researchers have identified areas of both losses and gains in cognition in older age. Cognitive ability and intelligence are often measured using standardized tests and validated measures. The psychometric approaches identified two categories of intelligence that show different rates of change across the life span (Schaie & Willis, 1996). Crystallized intelligence is a type of intellectual ability that relies on the application of knowledge, experience, and learned information. Crystallized intelligence encompasses abilities that draw upon experience and knowledge including vocabulary tests, solving number problems, and understanding texts. Fluid intelligence is a type of intelligence that relies on the ability to use information processing resources to reason logically and solve novel problems. Fluid intelligence includes information processing abilities, such as logical reasoning, remembering lists, spatial ability, and reaction time.



There are many stereotypes of older adults. They are sometimes seen as slow because of changes in cognitive processing speed. They are though, on average, excellent at drawing on personal experience and knowledge. And they tend to outperform young adults when it comes to social and emotional challenges. [Image: Alex E. Proimos, <https://goo.gl/20SbW8>, CC BY-NC 2.0, goo.gl/Fllc2e]

With age, systematic declines are observed on cognitive tasks requiring self-initiated, effortful processing, without the aid of supportive memory cues (Park, 2000). Older adults tend to perform poorer than young adults on memory tasks that involve recall of information, where individuals must retrieve information they learned previously without the help of a list of possible choices. For example, older adults may have more difficulty recalling facts such as names or contextual details about where or when something happened. What might explain these deficits as we age? As we age, working memory, or our ability to simultaneously store and use information, becomes less efficient. The ability to process information quickly also decreases with age. This slowing of processing speed may explain age differences on many different cognitive tasks. Some researchers have argued that inhibitory functioning, or the ability to focus on certain information while suppressing attention to less pertinent information, declines with age and may explain age differences in performance on cognitive tasks.

Fewer age differences are observed when memory cues are available, such as for recognition memory tasks, or when individuals can draw upon acquired knowledge or experience. For example, older adults often perform as well if not better than young adults on tests of word knowledge or vocabulary. With age often comes expertise, and research has pointed to areas where aging experts perform as well or better than younger individuals. For example, older typists were found to compensate for age-related declines in speed by looking farther ahead at printed text (Salthouse, 1984). Compared to younger players, older chess experts are able to focus on a smaller set of possible moves, leading to greater cognitive efficiency (Charness, 1981). Accrued knowledge of everyday tasks, such as grocery prices, can help older adults to make better decisions than young adults (Tentori, Osheron, Hasher, & May, 2001).

How do changes or maintenance of cognitive ability affect older adults' everyday lives? Researchers have studied cognition in the context of several different everyday activities. One example is driving. Although older adults often have more years of driving experience, cognitive declines related to reaction time or attentional processes may pose limitations under certain circumstances (Park & Gutchess, 2000). Research on interpersonal problem solving suggested that older adults use more effective strategies than younger adults to navigate through social and emotional problems (Blanchard-Fields, 2007). In the context of work, researchers rarely find that older individuals perform poorer on the job (Park & Gutchess, 2000). Similar to everyday problem solving, older workers may develop more efficient strategies and rely on expertise to compensate for cognitive decline.

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10.5: Psychosocial Development in Late Adulthood

Growing older means confronting psychological highs and lows that come with entering the last phase of life. Young people moving into adulthood take on new roles and responsibilities as their lives expand, but an opposite arc can be observed in older age.

Each phase of life has challenges. As you likely recall, the psychologist Erik Erikson, in his psychosocial theory, broke the typical life span into eight phases. Each phase presents a particular challenge to overcome. In the final stage, late adulthood, the challenge is to embrace ego integrity over despair. Some people are unable to successfully overcome the challenge. They may have to confront regrets. They may have to accept that they will never reach certain career goals. Or they must come to terms with what their career success has cost them, such as time with their family or declining personal health. Others, however, are able to achieve a strong sense of ego integrity and are able to embrace the new phase in life. When that happens, there is tremendous potential for creativity. They can learn new skills, practice new activities, and peacefully prepare for the end of life.

Ego Integrity vs. Despair

Erikson believed that late adulthood is a time for making sense out of one's life, finding meaning to one's existence, and adjusting to inevitable death. He called this stage ego integrity vs. despair. Imagine being able to look back on life with the sense that whatever choices you made as a younger person, those choices served to help grow you (or others, or even the world) in some positive way. Of course, life does not typically involve perfect choices or linear growth. But a sense of general contentment and acceptance, understanding and tolerance of others are important features of integrity. Bitterness and unresolved resentments about life events can bring a sense of despair in older adulthood as one asks the question, "Did I live a meaningful life?" But, Erikson's theory leaves room to heal emotionally and gain a sense of "ego integrity". Some ways (and this is not an exhaustive list) include psychotherapy, strong social support, journaling, forgiving ourselves or others, and taking time to mourn our losses and move forward however feels right for us.

Here is a "snap shot" view of Ego Integrity vs. Despair:

Ego Integrity involves:

- Feeling whole, complete, satisfied with achievements
- Viewing life in the context of all humanity
- Achieving psychosocial maturity

Despair (of this stage) involves:

- Feeling too many decisions were wrong, yet time is now too short; holds strong regrets
- Having an overall sense of bitterness; unaccepting of death
- Enmeshed with a general sense of anger and contempt for others; blames others for personal failures

Aging and Sexuality



Figure 10.4.1: In *Harold and Maude*, a 1971 cult classic movie, a twenty-something young man falls in love with a seventy-nine-year-old woman. The world was shocked by this movie! What is your response to this picture, given that the two people are meant to be lovers, not grandmother and grandson? (Flickr license; luckyjackson via Flickr)

It is no secret that people in the United States are unsettled about the subject of sex when it comes to older adults expressing their sexuality. It seems that no one wants to think about it or even talk about it. Most people want to believe that as we age, we become

completely asexual, as though aging and asexuality automatically go hand-in-hand (ignoring also the fact that many people are asexual from an early age and others enjoy sexual activity well into their 90s and beyond). That fact is part of what makes 1971's *Harold and Maude* so provocative. In this cult favorite film, Harold, a wealthy, alienated young man, meets and falls in love with Maude, a seventy-nine-year-old eccentric woman. What is so telling about the film is the reaction of his family, priest, and psychologist, who exhibit disgust and horror at such a match.

Although it still remains somewhat taboo to have an open, public national dialogue about aging and sexuality, the reality is that our sexual selves do not disappear after age sixty-five and older adults feel the consequences of the asexual-after-65 stereotype in ways including feeling isolated in sharing about their intimate lives to fear in seeking safe sex methods resulting in a rise in Sexually Transmitted Infections (STIs) among the aging population. "Older adults appear to be at increasing risk for STIs," says Dr. Khady Diouf, a reproductive infectious disease specialist at Harvard-affiliated Brigham and Women's Hospital. Diouf points to several possible reasons for the increase in STIs among older adults which includes not getting STI screening and treatment because both they and their doctors are often reluctant to raise the issue (Harvard Health Publishing).



Figure 10.4.2: Consistent with a cultural discomfort about aging and sex, openly license images depicting such things are hard to find. (Unsplash license; [Renate Vanaga](#) via [Unsplash](#))

Aging and Social Interaction

Aging "Out": LGBTQ Seniors

How do different groups in our society experience the aging process? Are there any experiences that are universal, or do different populations have different experiences? An emerging field of study looks at how older lesbian, gay, bisexual, and transgender and queer (LGBTQ) people experience the aging process and how their experience differs from that of other groups or the culturally dominant group. This issue is expanding with the aging of the Baby Boomer generation; As the Baby Boomer generation ages, the older adult population will increase from 12.8 percent to an estimated 19 percent in 2030 (<https://www.apa.org/pi/lgbt/resources/aging.aspx>).

A study titled *Shifting Social Context in the Lives of LGBTQ Older Adults* found that more than 2/3 of LGBTQ older adults have experienced victimization and discrimination more than three times in their lives, including discrimination in health, aging, and disability services (Public Policy & Aging Report, 2018). As these older adults transition to assisted-living facilities, they have the added burden of "disclosure management:" Having to decide with each new caretaker if it is safe to be "out" and discuss a life partner they may be missing terribly or the loneliness involved. In one case study, a 78 year old lesbian lived alone in a long-term care facility. She had been in a long-term relationship of thirty-two years and had been visibly active in her community earlier in her life. However, in the long-term care setting, she was much quieter about her orientation, feeling safer with anonymity and silence (Jenkins et al. 2010).

Even with laws that have passed to promote protection of these older adults, new data from a survey (Discrimination in America; Harvard School of Public Health, 2017) shows that discrimination still abounds and discourages LGBTQ older adults from seeking care and that they often have trouble finding alternative services if they are turned away. These data underscore the importance of protecting LGBTQ people from discrimination in health care. In the future, this will undoubtedly be an expanding career field for gerontologists, psychologists, medical personnel, and caregivers. Services intended for the older adult population need to be assessed proactively with positive changes implemented as may be necessary to be welcoming for people who are both older and identify as LGBTQ.

Disengagement Theory

Disengagement theory (Cummings & Henry, 1961) suggests that during late adulthood, the individual and society mutually withdraw. Older people become more isolated from others and less concerned or involved with life in general. This once popular theory is now criticized as being ageist and used in order to justify treating older adults as second class citizens. Most older adults do not disengage from society.

Activity Theory

Many older adults *want* to remain active and work toward replacing opportunities lost with new ones. Those who prefer to keep themselves busy demonstrate the Activity theory, which states that greater satisfaction with one's life occurs with those who remain active. Not surprisingly, more positive views on aging and greater health are noted with those who keep active than those who isolate themselves and disengage with others. Community, faith-based, and volunteer organizations can all provide those in late adulthood with opportunities to remain active and maintain social networks. According to Activity theory, social barriers to engagement, not the desires of aging adults, cause declining rates of interaction if that occurs. Erikson's concept of generativity applies to many older adults, just as it did in midlife.

Continuity Theory

Another theory, Continuity theory, suggests that as people age, they continue to view the self in much the same way as they did when they were younger. Their approach to problems, goals, and situations is much the same as it was before. They are the same individuals, but simply in older bodies. Consequently, older adults continue to maintain their identity even as they give up previous roles. For example, a retired Coast Guard commander attends reunions with shipmates, stays interested in new technology for home use, is meticulous in the jobs she does for friends and displays mementos of life on the ship. She is able to maintain a sense of self as a result. We do not give up who we are as we age. Hopefully, we are able to share these aspects of our identity with others throughout life. Focusing on what a person can do and pursuing those interests and activities is one way to optimize and maintain self-identity.

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10.6: Personality and Emotional Well-Being in Late Adulthood

Personality and Self-Related Processes

Have you ever heard anyone say something like, "Old people are all alike. They all eat the same kind of food, wear the same kind of clothes and have the same kind of haircuts"? It isn't because they age that you may find such similarities. It is because they belong to a *cohort* that experienced the same historical events and environmental conditions, just as you did (and are doing).



Figure 10.6.1: All elderly are not alike. (Unsplash license; [Alex Harvey](#) via [Unsplash](#))

Cohort Effects

A cohort is a group of people typically born around the same time or historical period, who share common experiences over time; sometimes called a generation (e.g., Baby Boom Generation or Millennial Generation). Your own age cohort has similarities as a result of the events of your times. Someday, people who are much younger than you will say things like, "All those Millennial old people are alike! They just want to carry their HUGE old iPhones around while taking old school selfies and looking at cat videos while telling us how 'sick' that new GIF was!" See what I mean here? There will be things from your cohort that generations not yet born will identify you with. But...while there certainly are generational similarities for people due to being part of a cohort, there are also differences because people are individuals. Individual differences are just as pronounced among older people as among younger ones. You are *you* and unique in that. But, you are also part of a historical cohort which plays a role in your development as you age as well.

Self-Perceptions

One aspect of the self that particularly interests life span and life course psychologists is the individual's perception and evaluation of their own aging and identification with an age group. Subjective age is a multidimensional construct that indicates how old (or young) a person feels and into which age group a person categorizes themselves. After early adulthood, most people say that they feel younger than their chronological age and the gap between subjective age and actual age generally increases. On average, after age 40 people report feeling 20% younger than their actual age (e.g., Rubin & Berntsen, 2006). Asking people how satisfied they are with their own aging assesses an evaluative component of age identity. Whereas some aspects of age identity are positively valued (e.g., acquiring seniority in a profession or becoming a grandparent), others may be less valued, depending on societal context. Perceived physical age (i.e., the age one looks in a mirror) is one aspect that requires considerable self-related adaptation in social and cultural contexts that value young bodies. Feeling younger and being satisfied with one's own aging are expressions of positive self-perceptions of aging. They reflect the operation of self-related processes that enhance well-being. Levy (2009) found that older individuals who are able to adapt to and accept changes in their appearance and physical capacity in a positive way report higher well-being, have better health, and live longer.

Social Relationships

Much research focuses on the associations between specific effects of long-term social relationships and health in later life. Having friends is an especially strong predictor of mental health among older adults. Regarding marriage, older married individuals who receive positive social and emotional support from their partner generally report better health than their unmarried peers (Antonucci, 2001; Umberson, Williams, Powers, Liu, & Needham, 2006; Waite & Gallagher, 2000). Despite the overall positive health effects of being married in old age (compared with being widowed, divorced, or single), living as a couple can have a "dark

side" if the relationship is strained or if one partner is the primary caregiver. The consequences of positive and negative aspects of relationships are complex (Birditt & Antonucci, 2008; Rook, 1998; Uchino, 2009). For example, in some circumstances, criticism from a partner may be perceived as valid and useful feedback whereas in others it is considered unwarranted and hurtful. In long-term relationships, habitual negative exchanges might have diminished effects. This is another reason having friends at this stage is important. Parent-child and sibling relationships are often the most long-term and emotion-laden social ties. Across the life span, the parent-child tie, for example, is characterized by a paradox of solidarity, conflict, and ambivalence (Fingerman, Chen, Hay, Cichy, & Lefkowitz, 2006).



Figure 10.6.2 (Unsplash license; [Mary Blackwey](#) via [Unsplash](#))

Emotion and Well-being

As we get older, the likelihood of losing loved ones or experiencing declines in health increases. Does the experience of such losses result in decreases in well-being in older adulthood? Researchers have found that well-being differs across the life span and that the patterns of these differences depend on how well-being is measured.

Measures of global subjective well-being assess individuals' overall perceptions of their lives. This can include questions about life satisfaction or judgments of whether individuals are currently living the best life possible. What factors may contribute to how people respond to these questions? Age, health, personality, social support, and life experiences have been shown to influence judgments of global well-being. It is important to note that predictors of well-being may change as we age. What is important to life satisfaction in young adulthood can be different in later adulthood. Early research on well-being argued that life events such as marriage or divorce can temporarily influence well-being, but people quickly adapt and return to their average baseline (called the hedonic treadmill; Diener, Lucas, & Scollon, 2006). The hedonic treadmill theory proposes that people eventually return to their own base range of happiness (higher or lower as the case may be for each person), regardless of what happens to them. More recent research suggests otherwise. Using longitudinal data, researchers have examined well-being prior to, during, and after major life events such as widowhood, marriage, and unemployment (Lucas, 2007). Different life events influence well-being in different ways, and individuals do not often adapt back to baseline levels of well-being. The influence of events, such as unemployment, may have a lasting negative influence on well-being as people age. Research suggests that self-reported well-being is actually highest in early adulthood and late adulthood and lowest in middle adulthood when there is a temporary U-shaped dip (which does not necessarily equate with the myth of the midlife crisis as you may recall). Other research finds that older adults report more positive and less negative affect than middle age and younger adults (Magai, 2008; Mroczek, 2001). It should be noted that both self-reported well-being and positive affect tend to taper off during late older adulthood and these declines may be accounted for by increases in health-related losses during these years (Charles & Carstensen, 2010).

The Six-factor Model of Psychological Well-being

Psychological well-being aims to evaluate the positive aspects of psychosocial development, as opposed to factors of ill-being, such as depression or anxiety. The Six-factor Model of Psychological Well-being is a theory developed by Carol Ryff, which determines six factors that contribute to an individual's psychological well-being, contentment, and happiness. Ryff's Model proposes the following six core dimensions of positive well-being:

1. Self-acceptance
2. Personal growth
3. Purpose in life
4. Environmental mastery
5. Autonomy
6. Positive relations with others

Ryff's model differs from other models in that it recognizes that well-being, like people, is multidimensional, and not merely about happiness, or "positive" emotions. A life well-lived is thought to be balanced, engaging each of the different aspects of well-being, instead of being too narrowly focused. Ryff roots her model from Aristotle's *Nichomachean Ethics*, where the goal of life isn't "feeling good" necessarily, but is, instead, about living optimally.

Research on this model has shown that older adults report higher levels of environmental mastery (feelings of competence and control in managing everyday life) and autonomy (independence), lower personal growth and purpose in life, and similar levels of positive relations with others as younger individuals. Links between health and interpersonal flourishing, or having high-quality connections with others, may be more important than previously thought in understanding how to optimize quality of life in old age.

The Impact of Ageism

Studying bias against old people is a relatively new phenomenon, partly because old people are a relatively new phenomenon. For hundreds of millennia, the average human lifespan rarely reached 40. There have always been some people who lived well beyond that age. Socrates, born in 470 B.C., died at 70 (of execution by poisoning, not age). Harriet Tubman, born in 1822, died at 91. But 20th century health care advancements and other factors caused life expectancy to skyrocket. An American born in 1900 lived, on average, just over 47 years. By 1960, that number had jumped to almost 70. Today, we can expect to live to about 80 (but we could like much longer).

Meanwhile, old people have become more segregated. Throughout most of human history, different generations usually lived together or nearby. But the Industrial Revolution lured younger people into cities for jobs, and urban living quarters couldn't accommodate extended families, said psychologist Todd D. Nelson, of California State University Nelson, Stanislaus. Grandparents and great-grandparents were transformed from familiar household members into relatives who lived separately and often distantly. Nelson mentioned an even less obvious reason for the changing status of old people: the invention of the printing press. Before then, old people were respected sources of valuable knowledge handed down from earlier generations and accumulated through their years of experience. Books made knowledge readily obtainable from strangers.

This transition 500 years ago seems echoed in today's supposed gap between "digital native" millennials and older people who, according to conventional wisdom, are technologically inept. Still another theory holds that ageism reflects our deep fears about dying. Death, once a normal household event, now usually occurs in nursing homes and hospitals — unfamiliar and unsettling places.

"Reminders of our mortality make us very anxious," Nelson said. Casual ageism, on the other hand, isn't even especially frowned upon. It's so common it may seem routine, trivial, well-intentioned. But it's not necessarily harmless. Researchers have found numerous links between cultural ageism and health problems — physical, cognitive and emotional — among older people.

Challenging ageism means getting people to pay closer attention to messages they've been hearing all their lives. These messages are found in jokes and insults and compliments and offhand remarks. They're in the TV programs and commercials we watch ([one study](#) found that people who watched more TV held more anti-age biases). They're posted on Facebook, which officially bans hate speech based on categories including race, nationality, religion and gender — but not age. They're in the advertising claims that have built a \$200 billion "anti-aging" industry of skin creams, Botox injections, hair coloring, hair restoration and cosmetic surgery.

From childhood on, Americans receive messages that old age means "you're unhealthy, your mind is shot, you're boring, you're depressed and sad and lonely," said Sally Brown of St. Paul, who teaches a course called "Aging With Gusto" through the St. Paul-based Vital Aging Network.

Negative Images

True, some older people are unhealthy or lonely — as are some young people. But similar characteristics are interpreted differently by age. A physically fit young person is healthy; a fit old person seems "younger." A teenager losing the car keys is momentarily careless, an older person is developing dementia. Statements that denigrate older people's functioning, thinking and appearance,

advocates say, can lead to old people being stigmatized, isolated, ignored, politically disadvantaged and treated as “others.” Yet despite — or because of — the ubiquity of these messages, people rarely consider that they might be damaging. Compared with other common prejudices, ageism is rarely discussed.

“Ageism is a thing, just like racism and sexism, and it’s been under the radar for, well, forever,” said Todd D. Nelson, a psychologist at California State University, Stanislaus. While researching the psychology of prejudice in general, Nelson noticed the scarcity of information about ageism. So he published a book, *Ageism: Stereo-typing and Prejudice Against Older Persons*. “In my writing, I ask the very simple question: Why are we hiding that we’re getting older?” Nelson said. “It implies we’re ashamed of getting older, that it’s bad to get older. It’s so deeply embedded in our culture.”

Biases take different forms with different targets, so comparisons aren’t always valid, but sometimes swapping groups in a statement can highlight offensiveness. A birthday card that says “‘Ha ha ha, too bad you’re [insert ethnicity, religion, etc.],’” Nelson said, “wouldn’t go over so well.”

‘Everyone Is Ageist’

Ageism is a weird prejudice in several respects. For one, it has an ironic aspect: It’s a bias held by younger people against a group to which they will eventually belong — if they’re lucky. Nelson has called it “prejudice against our feared future selves.”

“Everyone is ageist because we are all biased,” said Ashton Applewhite, author of *This Chair Rocks: A Manifesto Against Ageism* and a blog of the same name. Everyday ageism is so widespread that people tend to use “young” and “old” as almost synonymous with positive versus negative traits. “Someone will say, ‘My mom is 94 but she’s not old,’” Applewhite said. Wrong. “She may be peppy, she maybe having wild sex every night, she may be a lingerie model, she may be a marathon runner. But she is old.”



Figure 10.6.3 (Unsplash license; Mehmet Turgut Kirkgoz via Unsplash)

A Self-Fulfilling Prophecy

People who accept negative age stereotypes are likelier to suffer [cardiovascular](#) problems and symptoms of [Alzheimer’s](#), according to extensive research by Becca Levy, a professor of public health and psychology at Yale University. Meanwhile, Levy found that people with more positive images of aging had better [psychiatric health](#) and [physical functioning](#). Her subjects were studied over periods of years, minimizing the possibility that worsening health conditions shaped their outlook rather than the other way around. In one study, people over 60 with negative images of aging were more than 30 percent more likely to show [memory decline](#). In another, people with positive images of aging [lived longer](#) by an average of 7.5 years.

Levy [theorizes](#) that young people are especially likely to absorb ageist stereotypes because they don’t identify with older people and feel no need to defend against the insults. Later, when they become old, they turn those attitudes back on themselves, experiencing health problems they’ve grown up expecting old people to experience.

Even health-care professionals may treat older patients differently than they do younger ones.

We're All OK

Fighting ageism might begin with examining one's own preconceptions and looking for ways to substitute upbeat thoughts for downers. Start thinking of old age as "a time of growth, learning, exploration, adventure," Nelson suggested. Sally Brown agrees that people must change their mind-sets. "Embrace age as a natural process that begins at birth and continues throughout life," she said. Remember that everybody gets older every day, and those who get to be old are the lucky ones.

Consider your own responses to ageist language or behavior — do you laugh politely at an ageist joke or point out that it's problematic? Brown endorses challenging ageism when you encounter it. At the very least, don't be complicit — don't repeat the joke!

Even beauty magazines, traditionally purveyors of ageist attitudes, may be gaining awareness. Allure magazine announced on its [September cover](#), with Helen Mirren, that it would [stop using the term "anti-aging"](#) and called on the industry to follow suit. "Growing older is a wonderful thing because it means that we get a chance, every day, to live a full, happy life," the inside article said.

But lifelong lessons can be hard to escape. Even Brown admits she struggles not to feel flattered if someone tells her she looks younger than she is. "It's really not a compliment," she said. "It's saying that who I really am is not OK. To make me be OK you have to tell me I'm younger than I am. Actually, people of every age are OK."

Traditionally, research on aging described only the lives of people over age 65 and the very old. Contemporary theories and research recognizes that biogenetic and psychological processes of aging are complex and lifelong. Functioning in each period of life is influenced by what happened earlier and, in turn, affects subsequent change. We all age in specific social and historical contexts. Perhaps we can re-imagine what aging can mean as we evolve attitudes and stereotypes.

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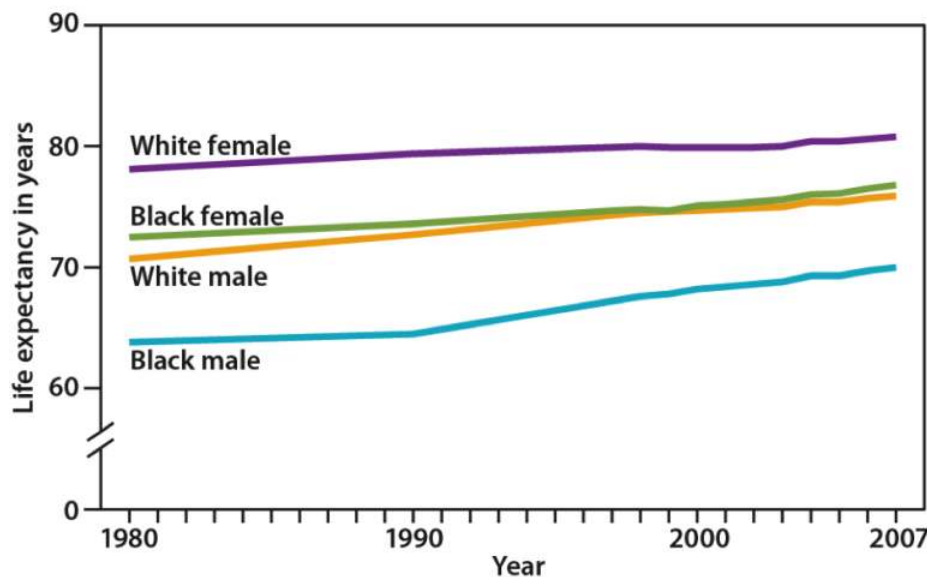
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10.7: Physical Development in Late Adulthood - Life Expectancy and Quality of Life

One way to prepare for the future is to find ways to improve quality of life. Life expectancy (how long you can expect to live) in 1900 was about 47 years. In 2017, life expectancy for all races was 77.9, 77.3 for males and 82 for females ([Living Longer: Historical and Projected Life Expectancy in the United States, 1960 to 2060](#), U.S. Census Bureau, 2020). For whites, life expectancy was 77.7 for males and 82.82 for females. For black males, life expectancy was 73.2 and is 79 for black females (U.S. Census Bureau, 2020). Historic racism or years of living under oppressive prejudice and discrimination can increase the incidence of stress-related illness and contribute to a lower life expectancy. As of 2015, the United States ranks 40th among other countries for its life expectancy. Based on data provided by the U.S. Census Bureau in 2020, Japanese and the Swedish men have the longest life expectancies (U.S. Census Bureau, 2020).

Life expectancy at birth



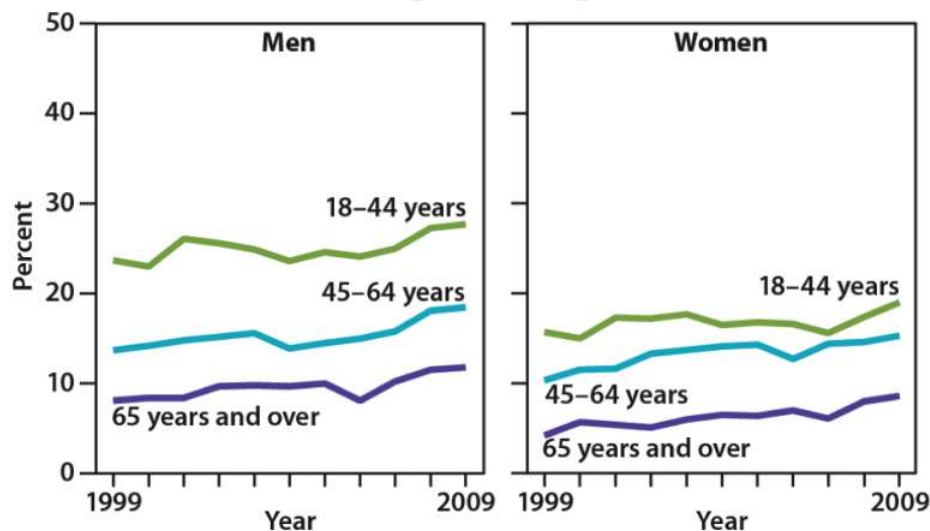
SOURCE: CDC/NCHS, *Health, United States, 2010*, Figure 1. Data from the National Vital Statistics System.

Increased life expectancy brings concern over the health and independence of those living longer. Greater attention is now being given to the number of years a person can expect to live without disability which is referred to as active life expectancy. When this distinction is made, we see that although women live longer than men, they are more at risk of living with disability (Weitz, 2007). What factors contribute to poorer health? Marriage has been linked to longevity, but spending years in a stressful marriage can increase the risk of illness. This negative effect is experienced more by women than men and seems to accumulate through the years. Its impact on health may not occur until a woman reaches 70 or older (Umberson, Williams, et. al., 2006). Sexism can also create chronic stress. The stress experienced by women as they work outside the home as well as care for family members can also ultimately have a negative impact on health. Poorer health in women is further attributed to an increase in rates of smoking by women in recent years (He et al., 2005).

The shorter life expectancy for men in general, is attributed to greater stress, poorer attention to health, more involvement in dangerous occupations, and higher rates of death due to accidents, homicide, and suicide. Social support can increase longevity. For men, life expectancy and health seems to improve with marriage. Spouses are less likely to engage in risky health practices and wives are more likely to monitor their husband's diet and health regimes. But men who live in stressful marriages can also experience poorer health as a result.

Key players in improving the quality of life among older adults will be those adults. By exercising, reducing stress, stopping smoking, limiting use of alcohol, and consuming more fruits and vegetables, older adults can expect to live longer and more active lives. (He et. al., 2005). Stress reduction both in late adulthood and earlier in life is also crucial. The reduction of societal stressors can promote active life expectancy. In the last 40 years, smoking rates have decreased, but obesity has increased, and physical activity has only modestly increased.

Participation in aerobic and muscle-strengthening activities*



NOTE: *Activities that meet the 2008 federal guidelines available at: <http://www.health.gov/paguidelines/default.aspx>.
SOURCE: CDC/NCHS, *Health, United States, 2010*, Figure 12. Data from the National Health Interview Survey.

Attitudes about Aging

Stereotypes about people of in late adulthood lead many to assume that aging automatically brings poor health and mental decline. These stereotypes are reflected in everyday conversations, the media and even in greeting cards (Overstreet, 2006). The following examples serve to illustrate.

- 1) Grandpa, fishing pole in one hand, pipe in the other, sits on the ground and completes a story being told to his grandson with “. . . and that, Jimmy, is the tale of my very first colonoscopy.” The message inside the card reads, “Welcome to the gross personal story years.” (Shoebox, A Division of Hallmark Cards.)
- 2) An older woman in a barber shop cuts the hair of an older, dozing man. “So, what do you say today, Earl?” she asks. The inside message reads, “Welcome to the age where pretty much anyplace is a good place for a nap.” (Shoebox, A Division of Hallmark Cards.)
- 3) A crotchety old man with wire glasses, a crumpled hat, and a bow tie grimaces and the card reads, “Another year older? You’re at the age where you should start eatin’ right, exercisin’, and takin’ vitamins . . .” The inside reads, “Of course you’re also at the age where you can ignore advice by actin like you can’t hear it.” (Hallmark Cards, Inc.)

Of course, these cards are made because they are popular. Age is not revered in the United States, and so laughing about getting older is one way to get relief. The attitudes are examples of ageism, prejudice based on age. Stereotypes such as these can lead to a self-fulfilling prophecy in which beliefs about one’s ability results in actions that make it come true. A positive, optimistic outlook about aging and the impact one can have on improving health is essential to health and longevity. Removing societal stereotypes about aging and helping older adults reject those notions of aging is another way to promote health and active life expectancy among the old.

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10.8: Physical Development in Late Adulthood - Primary and Secondary Aging

Healthcare providers need to be aware of which aspects of aging are reversible and which ones are inevitable. By keeping this distinction in mind, caregivers may be more objective and accurate when diagnosing and treating older patients. And a positive attitude can go a long way toward motivating patients to stick with a health regime. Unfortunately, stereotypes can lead to misdiagnosis. For example, it is estimated that about 10 percent of older patients diagnosed with dementia are actually depressed or suffering from some other psychological illness (Berger, 2005). The failure to recognize and treat psychological problems in older patients may be one consequence of such stereotypes.

Primary Aging

Primary aging refers to the inevitable changes associated with aging (Busse, 1969). These changes include changes in the skin and hair, height and weight, hearing loss, and eye disease. However, some of these changes can be reduced by limiting exposure to the sun, eating a nutritious diet, and exercising.

Skin and hair change as we age. The skin becomes drier, thinner, and less elastic as we age. Scars and imperfections become more noticeable as fewer cells grow underneath the surface of the skin. Exposure to the sun, or photoaging, accelerates these changes. Graying hair is inevitable. And hair loss all over the body becomes more prevalent.

Height and weight vary with age. Older people are more than an inch shorter than they were during early adulthood (Masoro in Berger, 2005). This is thought to be due to a settling of the vertebrae and a lack of muscle strength in the back. Older people weigh less than they did in mid-life. Bones lose density and can become brittle. This is especially prevalent in women. However, weight training can help increase bone density after just a few weeks of training.

Muscle loss occurs in late adulthood and is most noticeable in men as they lose muscle mass. Maintaining strong leg and heart muscles is important for independence. Weight-lifting, walking, swimming, or engaging in other cardiovascular exercises can help strengthen the muscles and prevent atrophy.

Visual Problems

The majority of people over 65 have some difficulty with vision, but most is easily corrected with prescriptive lenses. Three percent of those 65 to 74 and 8 percent of those 75 and older have hearing or vision limitations that hinder activity. The most common causes of vision loss or impairment are glaucoma, cataracts, age-related macular degeneration, and diabetic retinopathy (He et al., 2005).

Auditory Problems

Hearing loss is experienced by 30 percent of people age 70 and older. Almost half of people over 85 have some hearing loss (He et al., 2005). Among those who are in nursing homes, rates are higher. Older adults are more likely to seek help with vision impairment than with hearing loss, perhaps due to the stereotype that older people who have difficulty hearing are also less mentally alert. Being unable to hear causes people to withdraw from conversation and others to ignore them or shout. Unfortunately, shouting is usually high pitched and can be harder to hear than lower tones. The speaker may also begin to use a patronizing form of 'baby talk' known as **elderspeak** (See et al., 1999). This language reflects the stereotypes of older adults as being dependent, demented, and childlike. Imagine others speaking to you in that way. How would you feel? I am reminded of a man dying at home and a hospice worker, on shift for the first time, comes to his bedside and shouts, "Hi, baby. Want me to rub your little feet?" His response was an indignant look of disapproval.

Hearing loss is more prevalent in men than women. And it is experienced by more white, non-Hispanics than by Black men and women. Smoking, middle ear infections, and exposure to loud noises increase hearing loss.

In summary, primary aging can be compensated for through exercise, corrective lenses, nutrition, and hearing aids. And, more importantly, by reducing stereotypes about aging, people of age can maintain self-respect, recognize their own strengths, and count on receiving the respect and social inclusion they deserve.

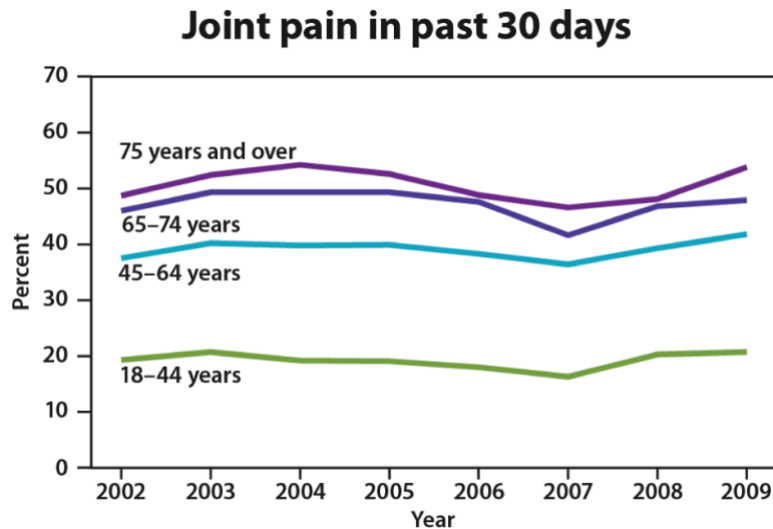
Secondary Aging

Secondary aging refers to changes that are caused by illness or disease. These illnesses reduce independence, impact quality of life, affect family members and other caregivers, and bring financial burden. Some of the most prevalent illnesses that cause impairment

are discussed below.

Arthritis

Arthritis is the leading cause of disability in older adults. Arthritis results in swelling of the joints and connective tissue that limits mobility. Arthritis is more common among women than men and increases with age. About 19.3 percent of people over 75 are disabled with arthritis; 11.4 percent of people between 65 and 74 experience this disability.



SOURCE: CDC/NCHS, *Health, United States, 2010*, Figure 7. Data from the National Health Interview Survey.

Hypertension

Hypertension or high blood pressure and associated heart disease and circulatory conditions increase with age. Hypertension disables 11.1 percent of 65 to 74 year olds and 17.1 percent of people over 75. Rates are higher among women and Blacks. Rates are highest for women over 75.

Heart Disease and Stroke

Coronary (heart) disease and stroke are higher among older men than women. The incidence of stroke is lower than that of coronary disease. What exactly is a stroke? As [explained by the CDC](#):

A stroke, sometimes called a brain attack, occurs when something blocks blood supply to part of the brain or when a blood vessel in the brain bursts. In either case, parts of the brain become damaged or die. A stroke can cause lasting brain damage, long-term disability, or even death.

If something happens to block the flow of blood, brain cells start to die *within minutes* because they can't get oxygen. This causes a stroke.

There are two types of stroke:

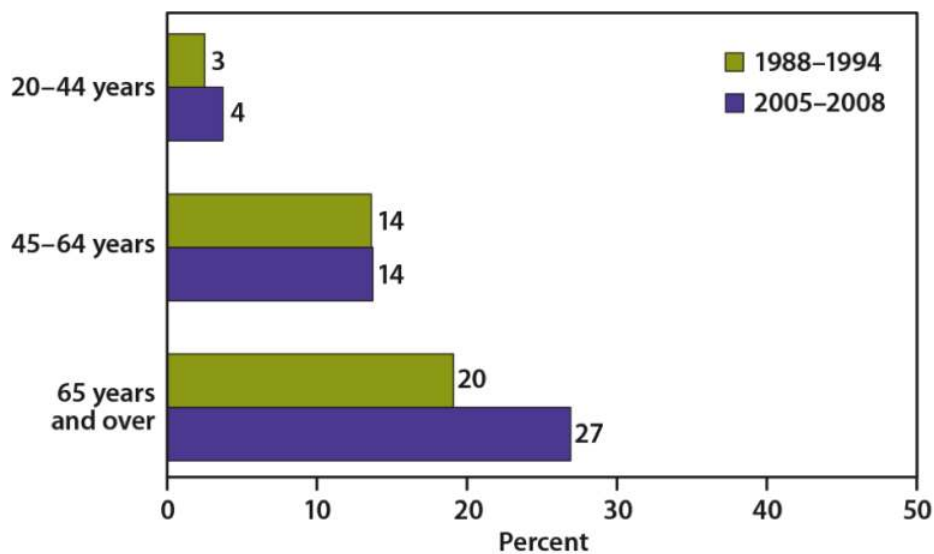
- An **ischemic stroke** occurs when blood clots or other particles block the blood vessels to the brain. Fatty deposits called plaque can also cause blockages by building up in the blood vessels.
- A **hemorrhagic stroke** occurs when a blood vessel bursts in the brain. Blood builds up and damages surrounding brain tissue.

Both types of stroke damage brain cells. Symptoms of that damage start to show in the parts of the body controlled by those brain cells.

Diabetes

In 2008, 27 percent of those 65 and older had diabetes. Rates are higher among Mexican origin individuals and Blacks than non-Hispanic whites. The treatment for diabetes includes dietary changes, increasing physical activity, weight loss for those who are overweight, and medication (National Institute on Aging, 2011).

Diabetes prevalence

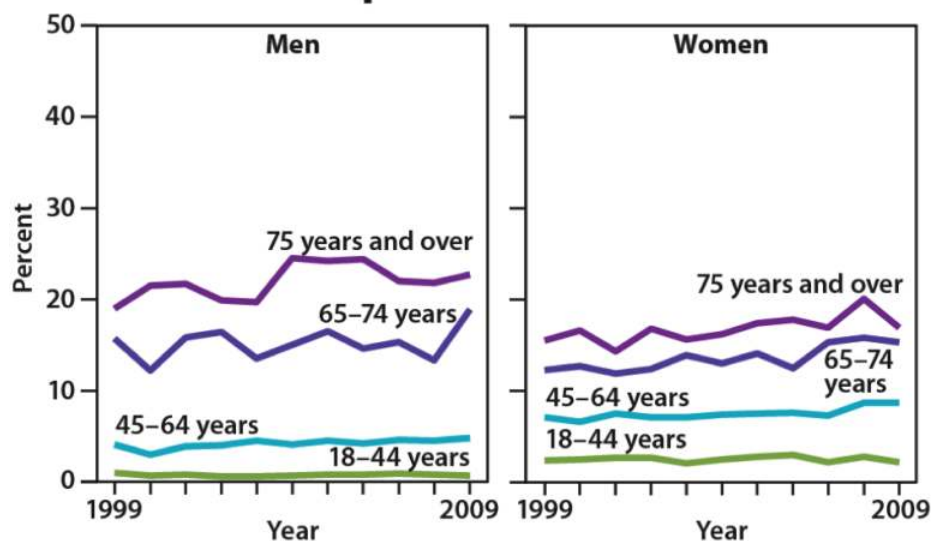


SOURCE: CDC/NCHS, *Health, United States, 2010*, Figure 5. Data from the National Health and Nutrition Examination Survey.

Cancer

Men over 75 have the highest rates of cancer at 28 percent. Women 65 and older have rates of 17 percent. Rates for older non-Hispanic Whites are twice as high as for Hispanics and non-Hispanic Blacks. The most common types of cancer found in men are prostate and lung cancer. Breast and lung cancer are the most common forms in women.

Respondent-reported lifetime cancer prevalence



SOURCE: CDC/NCHS, *Health, United States, 2010*, Figure 4. Data from the National Health Interview Survey.

Osteoporosis

Osteoporosis increases with age as bones become brittle and lose minerals. Bone loss is four times more likely in women than in men and becomes even more prevalent in women 85 and older. Whites suffer osteoporosis more than do non-Hispanic Blacks.

Alzheimer's Disease

Between 2.4 and 5.1 million people in the United States suffer with Alzheimer's disease (AD) (National Institute on Aging, 2011). This disease is not becomes more prevalent with age, but is not inevitable. This typically appears after age 60 but develops slowly for years before it's appearance. Social support, and aerobic exercise can reduce the risk of Alzheimer's disease. As the large cohort of Baby Boomers begins turning 65 in 2011, the number of cases of Alzheimer's disease is expected to increase dramatically. Where will these people receive care? Seventy percent of AD patients are cared for in the home. Such care can be emotionally, financially, and physically stressful. Most AD patients live 8 to 10 years with the disease and long-term care costs an average of \$174,000 per patient (He et al., 2005).

Normal Aging

The Baltimore Longitudinal Study on Aging (2006) began in 1958 and has traced the aging process in 1,400 people from age 20 to 90. Researchers from the BLSA have found that the aging process varies significantly from individual to individual and from one organ system to another. Kidney function may deteriorate earlier in some individuals. Bone strength declines more rapidly in others. Much of this is determined by genetics, lifestyle, and disease. However, some generalizations about the aging process have been found:

- Heart muscles thicken with age
- Arteries become less flexible
- Lung capacity diminishes
- Brain cells lose some functioning but new neurons can also be produced
- Kidneys become less efficient in removing waste from the blood
- The bladder loses its ability to store urine
- Body fat stabilizes and then declines
- Muscle mass is lost without exercise
- Bone mineral is lost. Weight bearing exercise slows this down.

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CHAPTER OVERVIEW

11: Death and Dying

11.1: Death and Dying - What Will You Learn?

11.2: Every Story Has an Ending

11.3: End of Life Choices

11.4: Social Death and Psychic Death

11.5: Ceremonies after Death

11.6: Grief, Bereavement, and Mourning

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11.1: Death and Dying - What Will You Learn?

After reading "Death and Dying" you should be able to:

1. Compare physiological, social, and psychic death.
 2. List and describe the stages of loss based on various models including that of Kubler-Ross.
 3. Explain the philosophy and practice of palliative care.
 4. Describe hospice care.
 5. Characterize bereavement and grief.
 6. Describe the various types of grief.
 7. Explore your own ideas about death and dying.
-

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11.2: Every Story Has an Ending

"Everything has to die," he told her during a telephone conversation.

"I want you to know how much I have enjoyed being with you, having you as my mentor and confidant and what a good father you have been to me. Thank you so much." she told him.

"You are entirely welcome." he replied.

He had known for years that smoking would eventually kill him. But he never expected that lung cancer would take his life so quickly or be so painful. A diagnosis in late summer was followed with radiation and chemotherapy during which time there were moments of hope interspersed with discussions about where his wife might want to live after his death and whether or not he would have a blood count adequate to let him precede with his next treatment. Hope and despair exist side by side. After a few months, depression and quiet sadness preoccupied him although he was always willing to relieve others by reporting that he 'felt a little better' if they asked. He returned home in January after one of his many hospital stays and soon grew worse. Back in the hospital, he was told of possible treatment options to delay his death. He asked his family members what they wanted him to do and then announced that he wanted to go home. He was ready to die. He returned home. Sitting in his favorite chair and being fed his favorite food gave way to lying in the hospital bed in his room and rejecting all food. Eyes closed and no longer talking, he surprised everyone by joining in and singing "Happy birthday" to his wife, son, and daughter-in-law who all had birthdays close together. A pearl necklace he had purchased 2 months earlier in case he died before his wife's birthday was retrieved and she told him how proud she would be as she wore it. He kissed her once and then again as she said goodbye. He died a few days later.



Figure 11.2.1: Photo Courtesy Robert Paul Young

Every story has an ending. Death marks the end of your life story. Our culture and individual backgrounds influence how we view death. In some cultures, death is accepted as a natural part of life and is embraced. In contrast, until about 50 years ago in the United States, a doctor might not inform someone that they were dying, and the majority of deaths occurred in hospitals. In 1967 that reality began to change with Cicely Saunders, who created the first modern hospice in England. The aim of hospice is to help provide a death with dignity and pain management in a humane and comfortable environment, which is usually outside of a hospital setting. In 1974, Florence Wald founded the first hospice in the United States. Today, hospice provides care for approximately 1.65 million Americans and their families. Because of hospice care, many terminally ill people are able to spend their last days at home.



Figure 11.2.3:

Developmental Perceptions of Death and Death Anxiety

The concept of death changes as we develop from early childhood to late adulthood. Cognitive development, societal beliefs, familial responsibilities, and personal experiences all shape an individual's view of death (Batts, 2004; Erber & Szuchman, 2015; National Cancer Institute, 2013).

Infancy: Certainly infants do not comprehend death, however, they do react to the separation caused by death. Infants separated from their primary caregiver may become sluggish and quiet, no longer smile or coo, sleep less, and develop physical symptoms such as weight loss.

Early Childhood: As you recall from Piaget's preoperational stage of cognitive development, young children experience difficulty distinguishing reality from fantasy. It is therefore not surprising that young children lack an understanding of death. They do not see death as permanent, assume it is temporary or reversible, think the person is sleeping, and believe they can wish the person back to life. Additionally, they feel they may have caused the death through their actions, such as misbehavior, words, and feelings.

Middle Childhood: Children in middle childhood are beginning to understand the finality of death. However, they may think that they could have prevented the death in some way, and may consequently feel guilty and responsible for the death.

Late Childhood: At this stage, children do understand the finality of death and know that everyone will die, including themselves. However, they may also think people die because of some wrong doing on the part of the deceased. They may develop fears of their parents/caregivers dying and continue to feel guilty if a loved one dies.

Adolescence: Adolescents understand death as well as adults. With formal operational thinking, adolescents can now think abstractly about death, philosophize about it, and ponder their own lack of existence. Some adolescents become fascinated with death and reflect on their own funeral by fantasizing on how others will feel and react. Despite a preoccupation with thoughts of death, the personal fable of adolescence causes them to feel immune to the death. Consequently, they often engage in risky behaviors, such as substance use, unsafe sexual behavior, and reckless driving thinking they are invincible.

Early Adulthood: In adulthood, there are differences in the level of fear and anxiety concerning death experienced by those in different age groups. For those in early adulthood, their overall lower rate of death is a significant factor in their lower rates of death anxiety. Individuals in early adulthood typically expect a long life ahead of them, and consequently do not think about, nor worry about death as a general.

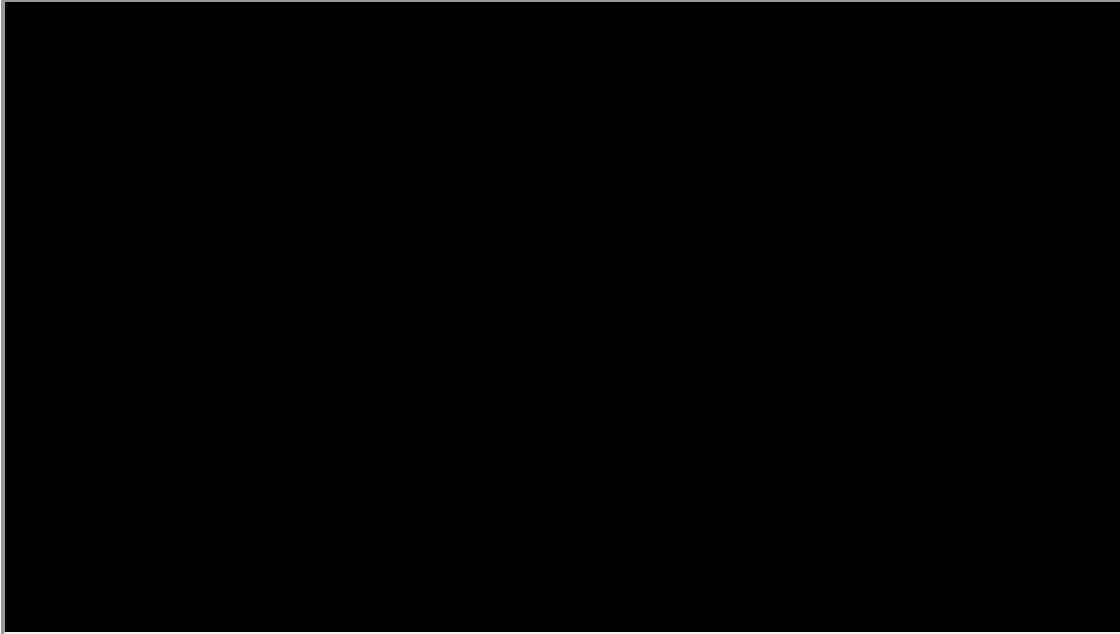
Middle Adulthood: Those in middle adulthood report more fear of death than those in either early and late adulthood. The caretaking responsibilities for those in middle adulthood is a significant factor in their fears. As mentioned previously, middle adults often provide assistance for both their children and parents/caregivers, and they feel anxiety about leaving them to care for themselves.

Late Adulthood: Contrary to the belief that because they are so close to death, they must fear death, those in late adulthood have lower fears of death than other adults. Why would this occur? First, older adults have fewer caregiving responsibilities and are not worried about leaving family members on their own. They also have had more time to complete activities they had planned in their lives, and they realize that the future will not provide as many opportunities for them. Additionally, they have less anxiety because they have already experienced the death of loved ones and have become accustomed to the likelihood of death. It is not death itself that concerns those in late adulthood; rather, it is having control over how they die.

Creating Meaning Through Death

How do we measure a successful life and make meaning of it as we deal with death? How do we find peace around death, especially when it is unexpected? These are existential type questions and perhaps they can only truly be answered individually. One example of a person creating meaning through death is Randy Pausch, who was a well-loved and respected professor at Carnegie Mellon University. Diagnosed with terminal pancreatic cancer in his mid-40s and given only 3–6 months to live, Pausch focused on living in a fulfilling way in the time he had left. Instead of embracing anger and depression, he presented his now famous last lecture called "Really Achieving Your Childhood Dreams." In his moving, yet humorous talk, he shares his insights on seeing the good in others, overcoming obstacles, and experiencing "zero gravity", among many other things. Despite his terminal diagnosis, Pausch lived the final year of his life with joy and hope, showing us that our plans for the future still matter, even if we know that we are dying. Here's is a short excerpt but the full video is posted as an optional view, as well right below this short clip.

Short excerpt:





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11.3: End of Life Choices

Advanced Directives

As individuals become more knowledgeable about medical procedures and practices, some people want the psychological comfort of ensuring that their wishes and desires are known in advance. This way, if the person ever becomes incapacitated or can no longer direct their own care, their loved ones will know what they want. For this reason, a person might write a living will or advance directive, which is a written legal document that details specific interventions a person wants - or doesn't want. For example, a person in the last stages of a terminal illness may not want to receive life-extending treatments. A person may also include a Do Not Resuscitate (DNR) Order and would share this with their family and close friends. A DNR Order states that if a person stops breathing or their heart stops beating, medical personnel such as doctors and nurses are NOT to take steps to revive or resuscitate the patient. However, it can be complicated because doctors do have the ability to make decisions for the patient, depending on many variables.

Advanced care planning refers to all documents that pertain to end-of-life care. These include advance directives and medical orders. **Advance directives** include documents that mention a health care agent and living wills. These are initiated by the patient. **Living wills** are written or video statements that outline the health care interventions the person wishes under certain circumstances. A living will can also include a health care proxy, which appoints a specific person to make medical decisions for you if you are unable to speak for yourself. People's desire for living wills and DNRs are often influenced by their spiritual beliefs, culture, and upbringing. **Durable power of attorney for health care** names the person who should make health care decisions in the event that the patient is incapacitated. In contrast, **medical orders** are crafted by a medical professional on behalf of a seriously ill patient. Unlike advanced directives, as these are doctor's orders, they must be followed by other medical personnel. Medical orders include Physician Orders for Life-sustaining Treatment (POLST), do-not-resuscitate, do-not-intubate, or do-not-hospitalize. In some instances, medical orders may be limited to the facility in which they were written. Several states have endorsed POLST so that they are applicable across health care settings (IOM, 2015).

Despite the fact that many people in the United States worry about the financial burden of end-of-life care, "more than one-quarter of all adults, including those aged 75 and older, have given little or no thought to their end-of-life wishes, and even fewer have captured those wishes in writing or through conversation" (IOM, 2015, p. 18).

Curative, Palliative, and Hospice Care

When individuals become ill, they need to make choices about the treatment they wish to receive. A person's age, type of illness, and personal beliefs about dying greatly affect the type of treatment chosen.

Curative care is designed to overcome and cure disease and illness (Fox, 1997). Its aim is to promote complete recovery, not just to reduce symptoms or pain. An example of curative care would be chemotherapy. While curing illness and disease is an important goal of medicine, it is not its only goal. As a result, some have criticized the curative model as ignoring the other goals of medicine, including preventing illness, restoring functional capacity, relieving suffering, and caring for those who cannot be cured.

Palliative care focuses on providing comfort and relief from physical and emotional pain to patients throughout their illness, even while being treated (NIH, 2007). In the past, palliative care was confined to offering comfort for the dying. Now it is offered whenever patients suffer from chronic illnesses, such as cancer or heart disease (IOM, 2015). Palliative care is also part of hospice programs.

Hospice emerged in the United Kingdom in the mid-20th century as a result of the work of Cicely Saunders. This approach became popularized in the U.S. by the work of Elizabeth Kübler-Ross (IOM, 2015), and by 2012 there were 5,500 hospice programs in the U.S. (National Hospice and Palliative Care Organization (NHPCO), 2013).

Hospice care, whether at home, in a hospital, nursing home, or hospice facility involves a team of professionals and volunteers who provide terminally ill patients with medical, psychological, and spiritual support, along with support for their families (Shannon, 2006). The aim of hospice is to help the dying be as free from pain as possible, and to comfort both the patients and their families during a difficult time. In order to enter hospice, a patient must be diagnosed as terminally ill with an anticipated death within 6 months (IOM, 2015). The patient is allowed to go through the dying process without invasive treatments. Hospice workers try to inform the family of what to expect and reassure them that much of what they see is a normal part of the dying process.

The basic elements of hospice include:

- Care of the patient and family as a single unit
- Pain and symptom management for the patient
- Having access to day and night care
- Coordination of all medical services
- Social work, counseling, and pastoral services
- Bereavement counseling for the family up to one year after the patient's death

Elizabeth Kübler-Ross (1969), who worked with the founders of hospice care, described the process of an individual accepting their own death. She proposed 5 stages of grief: denial, anger, bargaining, depression, and acceptance. Most individuals experience these stages, but the stages may occur in different orders, depending on the individual. In addition, not all people experience all of the stages. It is also important to note that some psychologists believe that the more a dying person fights death, the more likely the person is to remain stuck in the denial phase. This could make it difficult for the dying person to face death with dignity. However, other psychologists believe that not facing death until the very end is an adaptive coping mechanism for some people.

Whether due to illness or old age, not everyone facing death or the loss of a loved one experiences the negative emotions outlined in the Kübler-Ross model (Nolen-Hoeksema & Larson, 1999). For example, research suggests that people with strong spiritual beliefs are better able to cope with death because of their faith in an afterlife or reincarnation (depending on their particular belief) and because of social support from spiritual community associations (Hood, Spilka, Hunsberger, & Corsuch, 1996; McIntosh, Silver, & Wortman, 1993; Paloutzian, 1996; Samarel, 1991; Wortman & Park, 2008).

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11.4: Social Death and Psychic Death

Social Death

Social death begins much earlier than physiological death. Social death occurs when others begin to withdraw from someone who is terminally ill or has been diagnosed with a terminal illness. Those diagnosed with conditions such as AIDS or cancer may find that friends, family members, and even health care professionals begin to say less and visit less frequently. Meaningful discussions may be replaced with comments about the weather or other topics of light conversation. Doctors may spend less time with patients after their prognosis becomes poor. Why do others begin to withdraw? Friends and family members may feel that they do not know what to say or that they can offer no solutions to relieve suffering. They withdraw to protect themselves against feeling inadequate or from having to face the reality of death. Health professionals, trained to heal, may also feel inadequate and uncomfortable facing decline and death. People in nursing homes may live as socially dead for years with no one visiting or calling. Social support is important for quality of life and those who experience social death are deprived from the benefits that come from loving interaction with others.

Psychic Death

Psychic death occurs when the dying person begins to accept death and to withdraw from others and regress into the self. This can take place long before physiological death (or even social death if others are still supporting and visiting the dying person) and can even bring physiological death closer. People have some control over the timing of their death and can hold on until after important occasions or die quickly after having lost someone important to them. They can give up their will to live.

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11.5: Ceremonies after Death

A group of students were interviewed and asked what type of funeral they would want when they die. They responded in a variety of ways; each expressing both their personal beliefs and values and those of their culture.



I want a very inexpensive funeral-the bare minimum, only one vase of flowers, no viewing of the remains and no long period of mourning from my remaining family . . . funeral expenses are extremely overpriced and out of hand. . .

When I die, I would want my family members, friends, and other relatives to dress my body as it is usually done in my country, Ghana. Lay my dressed body in an open space in my house at the night prior to the funeral ceremony for my loved ones to walk around my body and mourn for me. . .

I would like to be buried right away after I die because I don't want my family and friends to see my dead body and to be scared.

In my family we have always had the traditional ceremony-coffin, grave, tombstone, etc. But I have considered cremation and still ponder which method is more favorable. Unlike cremation, when you are 'buried' somewhere and family members have to make a special trip to visit, cremation is a little more personal because you can still be in the home with your loved ones . . .

I would like to have some of my favorite songs played . . .I will have a list made ahead of time. I want a peaceful and joyful ceremony and I want my family and close friends to gather to support one another. At the end of the celebration, I want everyone to go to the Thirsty Whale for a beer and Spang's for pizza!

When I die, I want to be cremated . . . I want it the way we do it in our culture. I want to have a three day funeral and on the 4th day, it would be my burial/cremation day . . .I want everyone to wear white instead of black, which means they already let go of me. I also want to have a mass on my cremation day.

I would like the service to be at a Baptist church, preferably my Uncle Ike's small church. The service should be a celebration of life . . .I would like there to be hymns sung by my family members, including my favorite one, "It is Well With my Soul." At the end, I would like the message of salvation to be given to the attendees and an alter call for anyone who would like to give their life to Christ. . .

When I die, I would like to have a befitting burial ceremony as it is done in my Igbo customs. I chose this kind of funeral ceremony because that is what every average person wishes to have.

I want to be cremated . . . I want all attendees wearing their favorite color and I would like the song "Riders on the Storm" to be played . . .I truly hope all the attendees will appreciate the bass. At the end of this simple, short service, attendees will be given multi-colored helium filled balloons . . . released to signify my release from this earth. . .They will be invited back to the house for ice cream cones, cheese popcorn and a wide variety of other treats and much, much, much rock music . . .

I want to be cremated when I die. To me, it's not just my culture to do so but it's more peaceful to put my remains or ashes to the world. Let it free and not stuck in a casket.

Ceremonies provide survivors a sense of closure after a loss. These rites and ceremonies send the message that the death is real and allow friends and loved ones to express their love and duty to those who die. Under circumstances in which a person has been lost and presumed dead or when family members were unable to attend a funeral, there can continue to be a lack of closure that makes it difficult to grieve and to learn to live with loss. And although many people are still in shock when they attend funerals, the ceremony still provides a marker of the beginning of a new period of one's life as a survivor and can help people grieve as they need to.

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11.6: Grief, Bereavement, and Mourning

The terms grief, bereavement, and mourning are often used interchangeably, however, they have different meanings. **Grief** is the normal process of reacting to a loss. Grief can be in response to a physical loss, such as a death, or a social loss including a relationship or job. **Bereavement** is the period after a loss during which grief and mourning occurs. The time spent in bereavement for the loss of a loved one depends on the circumstances of the loss and the level of attachment to the person who died. **Mourning** is the process by which people adapt to a loss. Mourning is greatly influenced by cultural beliefs, practices, and rituals (Casarett, Kutner, & Abrahm, 2001). Grief can take many forms.

Dual-Process Model of Grieving

The dual-process model takes into consideration that bereaved individuals move back and forth between grieving and preparing for life without their loved one (Stroebe & Schut, 2001; Stroebe, Schut, & Stroebe, 2005). This model focuses on a **loss orientation**, which emphasizes the feelings of loss and yearning for the deceased and a **restoration orientation**, which centers on the grieving individual reestablishing roles and activities they had prior to the death of their loved one. When oriented toward loss, grieving individuals look back, and when oriented toward restoration they look forward. As one cannot look both back and forward at the same time, a bereaved person must shift back and forth between the two. Both orientations facilitate normal grieving and interact until bereavement has completed.

Grief Reactions

Typical grief reactions involve mental, physical, social and/or emotional responses. These reactions can include feelings of numbness, anger, guilt, anxiety, sadness and despair. The individual can experience difficulty concentrating, sleep and eating problems, loss of interest in pleasurable activities, physical problems, and even illness. Research has demonstrated that the immune systems of individuals grieving is suppressed and their healthy cells behave more sluggishly, resulting in greater susceptibility to illnesses (Parkes & Prigerson, 2010). However, the intensity and duration of typical grief symptoms do not match those usually seen in severe grief reactions.

Complicated Grief

After the loss of a loved one, some individuals experience **complicated grief**, which includes atypical grief reactions (Newson, Boelen, Hek, Hofman, & Tiemeier, 2011). Symptoms of complicated grief include: Feelings of disbelief, a preoccupation with the dead loved one, distressful memories, feeling unable to move on with one's life, and an intense and sustained yearning for the deceased. Additionally, these symptoms may mirror those seen in major depressive disorder (Youdin, 2016).

According to the Diagnostic and Statistical Manual of Mental Disorders (5th ed.; American Psychiatric Association, 2013), distinguishing between major depressive disorder and complicated grief requires clinical judgment. The psychologist needs to evaluate the client's individual history and determine whether the symptoms are focused entirely on the loss of the loved one and represent the individual's cultural norms for grieving, which would be acceptable. Those who seek assistance for complicated grief usually have experienced traumatic forms of bereavement, such as unexpected, multiple and violent deaths, or those due to murders or suicides (Parkes & Prigerson, 2010).

Disenfranchised Grief

Grief that is not socially recognized is referred to as **disenfranchised grief** (Doka, 1989). Examples of disenfranchised grief include death due to AIDS, the suicide of a loved one, perinatal deaths, the death of a pet, or ex-spouse, and psychological losses, such as a partner developing Alzheimer's disease. Due to the type of loss, there is no formal mourning practices or recognition by others that would comfort the grieving individual.

Consequently, individuals experiencing disenfranchised grief may suffer intensified symptoms due to the lack of social support (Parkes & Prigerson, 2010).

Anticipatory Grief

Grief that occurs when a death is expected and survivors have time to prepare to some extent before the loss is referred to as **anticipatory grief**. This expectation can make adjustment after a loss somewhat easier (Kübler-Ross & Kessler, 2005). A death

after a long-term, painful illness may bring family members a sense of relief that the suffering is over, and the exhausting process of caring for someone who is ill is also completed.

There are layers of grief. Initial denial, marked by shock and disbelief in the weeks following a loss may become an expectation that the loved one will walk in the door. And anger directed toward those who could not save our loved one's life, may become anger that life did not turn out as we expected. There is no right way to grieve. A bereavement counselor expressed it well by saying that grief touches us on the shoulder from time to time throughout life.

Mixed Emotions

Grief and mixed emotions go hand in hand. A sense of relief is accompanied by regrets and periods of reminiscing about our loved ones are interspersed with feeling haunted by them in death. Our outward expressions of loss are also sometimes contradictory. We want to move on but at the same time are saddened by going through a loved one's possessions and giving them away. We may no longer feel sexual arousal or we may want sex to feel connected and alive. We need others to befriend us but may get angry at their attempts to console us. These contradictions are normal and we need to allow ourselves and others to grieve in their own time and in their own ways.

"Modern" Grief

The "death-denying, grief-dismissing world" is the modern world (Kubler-Ross & Kessler, 2005, p. 205). We are asked to grieve privately, quickly, and to medicate our suffering. Employers usually grant us 3 to 5 days for bereavement, if our loss is that of an immediate family member. And such leaves are sometimes limited to no more than one per year. Yet grief takes much longer and the bereaved are seldom ready to perform well on the job. Obviously life does have to continue. But Kubler-Ross and Kessler suggest that contemporary American society would do well to acknowledge and make more caring accommodations to those who are in grief.

Four Tasks of Mourning

Worden (2008) identified four tasks that facilitate the mourning process. Worden believes that all four tasks must be completed, but they may be completed in any order and for varying amounts of time. These tasks include:

- Acceptance that the loss has occurred.
- Working through the pain of grief.
- Adjusting to life without the deceased.
- Starting a new life while still maintaining a connection with the deceased.

Support Groups

Support groups are helpful for grieving individuals of all ages, including those who are sick, terminal, caregiving, or mourning the loss of a loved one. Support groups reduce isolation, connect individuals with others who have similar experiences, and offer those grieving a place to share their pain and learn new ways of coping (Lynn & Harrold, 2011). Support groups are available through spiritual organizations, hospitals, hospice, nursing homes, mental health facilities, and schools for children.

Viewing death as an integral part of the lifespan will benefit those who are ill, those who are bereaved, and all of us as friends, caregivers, partners, family members and humans in a global society.

Five Stages of Grief

There are several theoretical models of grief, however, none is all encompassing (Youdin, 2016). These models are merely guidelines for what an individual may experience while grieving. However, if individuals do not fit a model, it does not mean there is something "wrong" with the way they experience grief. It is important to remember that there is no one way to grieve, and people move through a variety of stages of grief in various ways.

The most well-known model of grief was developed by Swiss psychiatrist Kübler-Ross who first introduced her five stage grief model in her book *On Death and Dying*. Kübler-Ross' model was based off her work with terminally ill patients and has received much criticism in the years since. Mainly, because people studying her model mistakenly believed this is the specific order in which people grieve and that all people go through all stages. Kübler-Ross now notes that these stages are not linear and some

people may not experience any of them. Yet and still, others might only undergo two stages rather than all five, or one stage, or three stages and so forth. These "stages" are not really stages that a person goes through in order or only once; nor are they stages that occur with the same intensity. Indeed, the process of death is influenced by a person's life experiences, the timing of their death in relation to life events, the predictability of their death based on health or illness, their belief system, and their assessment of the quality of their own life. Nevertheless, these stages help us to understand and recognize some of what a dying person experiences psychologically, and by understanding, we are more equipped to support that person as they die. IMAGE ATTRIBUTION - Photo by [behnam jaafarianpoor](#) on [Unsplash](#)



Denial

The first reaction to the overwhelming and often unimaginable news of a death is denial. Disbelief or shock, protects us by allowing such news to enter slowly and to give us time to come to grips with what is taking place. The person who receives positive test results for life-threatening conditions may feel a sense of disbelief psychologically even though they know that the results are true.

Anger

Like denial, anger also provides us with protection in that being angry energizes us to fight against something and gives structure to a situation that may be thrusting us into. It is much easier to be angry than to be sad, in pain, or depressed. It helps us to temporarily believe that we have a sense of control over our future and to feel that we have at least expressed our rage about how unfair life can be. Anger can be focused on a person, a health care provider, at God (according to a person's own beliefs), or at the world in general. It can be expressed over issues that have nothing to do with our death; consequently, being in this stage of loss is not always obvious.

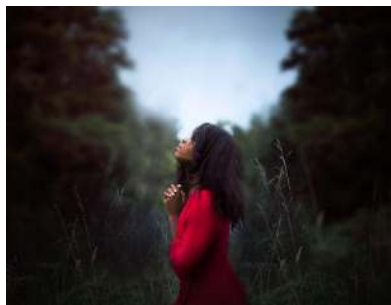


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Bargaining

Bargaining involves trying to think of what could be done to turn the situation around. Living better, devoting self to a cause, being a better friend, parent, or spouse, are all agreements one might willingly commit to if doing so would lengthen life. Asking to just live long enough to witness a family event or finish a task are examples of bargaining.

Depression

Depression in this stage might include withdrawal from life, feeling numb, living in a fog, and not wanting to get out of bed. The world might seem too much and too overwhelming to face. There is no desire to be around others, the person does not feel like talking, and experiences feelings of hopelessness, even potential suicidal thoughts – thinking “what’s the point of going on?” Sometimes hospice care may include the use of antidepressants to help manage depression during this stage.

Acceptance

The final stage in the Kübler-Ross model is acceptance. Acceptance involves learning how to carry on and to incorporate this aspect of the life span into daily life. Reaching acceptance does not in any way imply that people who are dying are happy about it or content with it. It means that they are facing it and continuing to make arrangements and to say what they wish to say to others. Some terminally ill people find that they live life more fully than ever before after they come to this stage.

According to Kübler-Ross (1969), behind these five stages focused on the identified emotions, there is a sense of hope. Kübler-Ross noted that in all the 200 plus patients she and her students interviewed, a little bit of hope that they might not die was often in the back of their minds.

Criticisms of the Kübler-Ross Five Stages of Grief Model

Some researchers have been skeptical of the validity of there being stages to grief among the dying (Friedman & James, 2008). As Kübler-Ross notes in her own work, it is difficult to empirically test the experiences of the dying. “How do you do research on dying,...? When you cannot verify your data and cannot set up experiments?” (Kübler-Ross, 1969, p. 19). She and four students from the Chicago Theology Seminary in 1965 decided to listen to the experiences of dying patients, but her ideas about death and dying are based on the interviewers’ collective “feelings” about what the dying were experiencing and needed (Kübler-Ross, 1969).

There have been challenges to the notion that denial and acceptance are beneficial to the grieving process (Telford, Kralik, & Koch, 2006). Denial can become a barrier between the patient and health care specialists, and reduce the ability to educate and treat the patient. Similarly, acceptance of a terminal diagnosis may also lead patients to give up and forgo treatments to alleviate their symptoms. In fact, some research suggests that optimism about one’s prognosis may help in one’s adjustment and increase longevity (Taylor, Kemeny, Reed, Bower & Gruenewald, 2000).

A third criticism is not so much of Kübler-Ross’s work, but how others have assumed that these stages apply to anyone who is grieving. Her research focused only on those who were terminally ill. This does not mean that others who are grieving the loss of someone would necessarily experience grief in the same way. Friedman and James (2008) and Telford et al. (2006) expressed concern that mental health professionals, along with the general public, may assume that grief follows a set pattern, which may create more harm than good.

Lastly, the Yale Bereavement Study, completed between January 2000 and January 2003, did not find support for the Five Stage of Grief Model (Maciejewski, Zhang, Block, & Prigerson, 2007). Results indicated that acceptance was the most commonly reported reaction from the start, and yearning was the most common negative feature for the first two years. The other variables, such as disbelief, depression, and anger, were typically absent or minimal.

Although there is criticism of the Five Stages of Grief Model, Kübler-Ross made people more aware of the needs and concerns of the dying, especially those who were terminally ill. As she notes,...when a patient is severely ill, he is often treated like a person with no right to an opinion. It is often someone else who makes the decision if and when and where a patient should be hospitalized. It would take so little to remember that the sick person has feelings, has wishes and opinions, and has – most important of all – the right to be heard. (1969, p. 7-8).

Conclusion

Death and grief are topics that are being given greater consideration. Viewing death as an integral part of the lifespan will benefit those who are ill, those who are bereaved, and all of us as friends, caregivers, partners, family members and humans in a global society.

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Openness | Openness to experience describes a person's degree of intellectual curiosity, creativity, and preference for novelty and variety. Some disagreement remains about how to interpret this factor, which is sometimes called intellect.

Glossary

Sample Word 1 | Sample Definition 1

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