Lifespan Development - A Psychological Perspective

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MARTHA LALLY AND SUZANNE VALENTINE-FRENCH



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Introduction

This textbook begins with a comprehensive review of the major theoretical approaches that shape our understanding of development from conception to death. *What is the difference between chronological age and social age? What is the difference between a generation and a life stage? How do differences in life experiences with respect to cultural and economic resources shape development? How do genes and environments interact to influence development? Do people change or remain the same across the life course?* The theoretical approaches that address these big picture questions carry through the textbook as themes that guide empirical research on processes of development. In each chapter, up-to-date research findings describe and explain biological, psychological, and social development across the life course. Research is presented in an accessible and engaging manner that allows students to situate their own experience within the lifespan view of psychology.

In this edition, infographics from *Statistics Canada* and other Canadian organizations have been added as supplementary materials, highlighting the Canadian context and illustrating the lives of Canadians at different stages of the life course. "Test your knowledge" comprehension materials have been added at the end of each section, along with a Glossary added at the end of the book.

About the Book

This open textbook *Lifespan Development – A Psychological Perspective* by Martha Lally and Suzanne Valentine-French, licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License, has been adopted for PSYC 333 Fundamentals of Lifespan Development by Dr. Erin Barker at Concordia University, Montreal.

Content was replicated from the the original version on LibreTexts to Pressbooks. Minor changes were made throughout the book, including:

- Relevant Canadian resources were added
- H5P interactive activities were added
- A glossary was added
- Formatting of figures and tables was improved (e.g. numbering, positions, captions)
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1. UNESCO. "Open Educational Resources (OER)". Accessed January 19, 2021. https://en.unesco.org/themes/building-knowledge-societies/oer

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1: INTRODUCTION TO LIFESPAN DEVELOPMENT

Developmental Psychology, *also known as Human Development or Lifespan Development, is the scientific study of ways in which people change, as well as stay the same, from conception to death.* You will no doubt discover in the course of studying that the field examines change across a broad range of topics. These include physical and other psychophysiological processes, cognition, language, and psychosocial development, including the impact of family and peers.

1.1: Prelude to Lifespan Development

Originally concerned with infants and children, Developmental Psychology has expanded to include adolescence and more recently, aging and the entire life span. Previously, the message was once you are 25, your development is essentially completed. Our academic knowledge of the lifespan has changed and although there is still less research on adulthood than on childhood, adulthood is gaining increasing attention. This is particularly true now that the large cohort known as the baby boomers are beginning to enter late adulthood. The assumption that early childhood experiences dictate our future is also being called into question. Rather, we have come to appreciate that growth and change continues throughout life and experience continues to have an impact on who we are and how we relate to others. We now recognize that adulthood is a dynamic period of life marked by continued cognitive, social, and psychological development.



Figure 1.1: A family photo.

You will also discover that developmental psychologists investigate key questions, such as whether children are qualitatively different from adults or simply lack the experience that adults draw upon. Other issues that they deal with is the question of whether development occurs through the gradual accumulation of knowledge or through shifts from one stage of thinking to another; or if children are born with innate knowledge or figure things out through experience; and whether development is driven by the social context or something inside each child. From the above explanation you may be thinking already that developmental psychology is related to other applied fields. You are very right. The field informs several applied fields in psychology, including, educational psychology, psychopathology, and forensic developmental psychology. It also complements several other basic research fields in psychology including social psychology, cognitive psychology, and comparative psychology. Lastly, it draws from the theories and research of several scientific fields including biology, sociology, health care, nutrition, and anthropology.

1.2: Lifespan Perspective

Learning Objectives: Lifespan Perspective

- Explain the lifespan perspective and its assumptions about development.
- Differentiate periods of human development.
- Explain the issues underlying lifespan development
- Identify the historical and contemporary theories impacting lifespan development

Lifespan Perspective

Paul Baltes identified several underlying principles of the lifespan perspective (Baltes, 1987; Baltes, Lindenberger, & Staudinger, 2006). Lifespan theorists believe that **development is life-long**, and change is apparent across the lifespan. No single age period is more crucial, characterizes, or dominates human development. Consequently, the term lifespan development will be used throughout the textbook.

Development is multidirectional. Humans change in many directions. We may show gains in some areas of development, while showing losses in other areas. Every change, whether it is finishing high school, getting married, or becoming a parent, entails both growth and loss.

Development is multidimensional. We change across three general domains/dimensions; physical, cognitive, and psychosocial. The **physical domain** includes *changes in height and weight, sensory capabilities, the nervous system, as well as the propensity for disease and illness*. The **cognitive domain** encompasses the *changes in intelligence, wisdom, perception, problem- solving, memory, and*

language. The **psychosocial domain** focuses on *changes in emotion, self- perception and interpersonal relationships with families, peers, and friends.* All three domains influence each other. It is also important to note that a change in one domain may cascade and prompt changes in the other domains. For instance, an infant who has started to crawl or walk will encounter more objects and people, thus fostering developmental change in the child's understanding of the physical and social world.

Development is multidisciplinary. As mentioned at the start of the chapter, human development is such a vast topic of study that it requires the theories, research methods, and knowledge base of many academic disciplines.

Development is characterized by plasticity. Plasticity *is all about our ability to change and that many of our characteristics are malleable.* For instance, plasticity is illustrated in the brain's ability to learning from experience and how it can recover from injury.

Development is multicontextual. Development occurs in many contexts. Baltes (1987) identified three specific contextual influences.

- *Normative age-graded influences*: An **age-grade** *is a specific age group, such as toddler, adolescent, or senior*. Humans in a specific age-grade share particular experiences and developmental change
- *Normative history-graded influences*: The time period in which you are born (Table 1.1) shapes your experiences. A **cohort** *is a group of people who are born at roughly the same period in a particular society.* These people travel through life often experiencing similar circumstances.
- *Non-normative life influences*: Despite sharing an age and history with our peers, each of us also has unique experiences that may shape our development. A child who loses his/her parent at a young age has experienced a life event that is not typical of the age group.

T

Generation
Silent Generation
Baby Boomers
Generation X
Millennials

Another context that influences our lives is our social standing, socioeconomic status, or social class. **Socioeconomic status (SES)** *is a way to identify families and households based on their shared levels of education, income, and occupation.* While there is certainly individual variation, members of a social class tend to share similar lifestyles, patterns of consumption, parenting styles, stressors, religious preferences, and other aspects of daily life. All of us born into a class system are socially located and may move up or down depending on a combination of both socially and individually created limits and opportunities.

Families with higher socioeconomic status usually are in occupations (attorneys, physicians, executives) that not only pay better, but also grant them a certain degree of freedom and control over their job. Having a sense of autonomy or control is a key factor in experiencing job satisfaction, personal happiness, and ultimately health and well-being (Weitz, 2007). Those families with lower socioeconomic status are typically in occupations that are more routine, more heavily supervised, and require less formal education. These occupations are also more subject to job disruptions, including lay-offs and lower wages.

Poverty level is an income amount established by the federal government that is based on a set of income thresholds that vary by family size (United States Census Bureau, 2016). If a family's income is less than the government threshold, that family is considered in poverty. Those living at or near poverty level may find it extremely difficult to sustain a household with this amount of income. 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 higher income status may fear losing that status, but the poor may have greater concerns over losing housing.

Today we are more aware of the variations in development and the impact that culture and the environment have on shaping our lives. **Culture** *is the totality of our shared language, knowledge, material objects, and behavior.* It includes ideas about what is right and wrong, what to strive for, what to eat, how to speak, what is valued, as well as what kinds of emotions are called for in certain situations. Culture teaches us how to live in a society and allows us to advance because each new generation can benefit from the solutions found and passed down from previous generations. Culture is learned from parents, schools, churches, media, friends and others throughout a lifetime. The kinds of traditions and values that evolve in a particular culture serve to help members function in their own society and to value their own society. We tend to believe that our own culture's practices and expectations are the right ones. *This belief that our own culture is superior is called* **ethnocentrism** and is a normal by-product of growing up in a culture. It becomes a roadblock, however, when it inhibits understanding of cultural practices from other societies. **Cultural relativity** *is an appreciation for cultural differences and the understanding that cultural practices are best understood from the standpoint of that particular culture.*



Figure 1.2: Think of other ways culture may have affected your development. How might cultural differences influence interactions between teachers and students, nurses and patients, or other relationships?

Culture is an extremely important context for human development and understanding development requires being able to identify which features of development are culturally based. This understanding is somewhat new and still being explored. Much of what developmental theorists have described in the past has been culturally bound and difficult to apply to various cultural contexts. The reader should keep this in mind and realize that there is still much that is unknown when comparing development across cultures.

Lifespan vs. Life expectancy: At this point you must be wondering what the difference between lifespan and life expectancy is, according to developmentalists. **Lifespan**, or longevity, *refers to the length of time a species can exist under the most optimal conditions*. For instance, the grey wolf can live up to 20 years in captivity, the bald eagle up to 50 years, and the Galapagos tortoise over 150 years (Smithsonian National Zoo, 2016). The longest recorded

lifespan for a human was Jean Calment who died in 1994 at the age of 122 years, 5 months, and 14 days (Guinness World Records, 2016). **Life expectancy** *is the predicted number of years a person born in a particular time period can reasonably expect to live* (Vogt & Johnson, 2016).

1.3: 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.

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 travelling 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 adaptive and excited to meet new challenges. Remember you are as *young* or *old* as you feel.



Figure 1.3: You are as young as 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?

1.4: Periods of Development

Table 1.2 reflects unique aspects of the various stages of childhood and adulthood that will be explored in this book. So while both an 8 month old and an 8 year old are considered children, they have very different motor 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.

***Table 1.2*: Age Periods of Development**

Age Period	Description
Prenatal	*Starts at conceptions, continues through implantation in the uterine wall by the embryo, and ends at birth*
Infancy and Toddlerhood	*Starts at birth and continues to two years of age*
Early Childhood	*Starts at two years of age and continues until six years of age*
Middle and Late Childhood	*Starts at six years of age and continues until the onset of puberty*
Adolescence	*Starts at the onset of puberty until 18*
Emerging Adulthood	*Starts at 18 until 25*
Early Adulthood	*Starts at 25 until 40-45*
Middle Adulthood	*Starts at 40-45 until 60-65*
Late Adulthood	*Starts at 65 onward*

Prenatal Development: Conception occurs and development begins. All of the major structures of the body are forming and the health of the mother is of primary concern. Understanding nutrition, teratogens (or environmental factors that can lead to birth defects), and labor and delivery are primary concerns. **Infancy and Toddlerhood**: The first two 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.



Figure 1.4: Infancy and Toddlerhood.

Early Childhood: This period is also referred to as the preschool years and consists of the years which follow toddlerhood and precede formal schooling. As a two to six-year-old, the child is busy learning language, is gaining a sense of self and greater independence, and is beginning to learn the workings of the physical world.

Middle and Late Childhood: The ages of six to the onset of puberty comprise middle and late 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.

Adolescence: Adolescence is a period of dramatic physical change marked by an overall growth spurt and sexual maturation, known as puberty. It is also a time of cognitive 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 Adulthood: The period of emerging adulthood is a transitional time between the end of adolescence and before individuals acquire all the benchmarks of adulthood. Continued identity exploration and preparation for full independence from parents are demonstrated. Although at one's physiological peak, emerging adults are most at risk for involvement in violent crimes and substance abuse.

Early Adulthood: The twenties and thirties are identified as early adulthood. Intimate relationships, establishing families, and work are primary concerns at this stage of life.

Middle Adulthood: The forties through the mid-sixties is referred to as middle adulthood. This is a period in which aging becomes more noticeable and when many people are at their peak of productivity in love and work.



Figure 1.5: Middle Adulthood.

Late Adulthood: Late adulthood is sometimes subdivided into two categories: The young-old who are from 65-84 years and the oldest-old who are 85 years and older. One of the primary differences between these groups is that the young-old are still relatively healthy, productive, active, and the majority continue to live independently. With both age groups the risks of diseases such as, arteriosclerosis, cancer, and cerebral vascular disease increases substantially.

1.5: Issues in Lifespan Development

Nature and Nurture: 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 or environmental factors-or both. Chances are, you can see the ways in which both heredity and environmental factors (such as lifestyle, diet, and so on) have contributed to these features. For decades, scholars have carried on the "nature/nurture" debate. For any particular feature, those on the side of **Nature** *would argue that heredity plays the most important role in bringing about that feature.* Those on the side of **Nurture** *would argue that one's environment is most significant in shaping the way we are.* This debate continues in all aspects of human development, and most scholars agree that there is a constant interplay between the two forces. It is difficult to isolate the root of any single behavior as a result solely of nature or nurture.

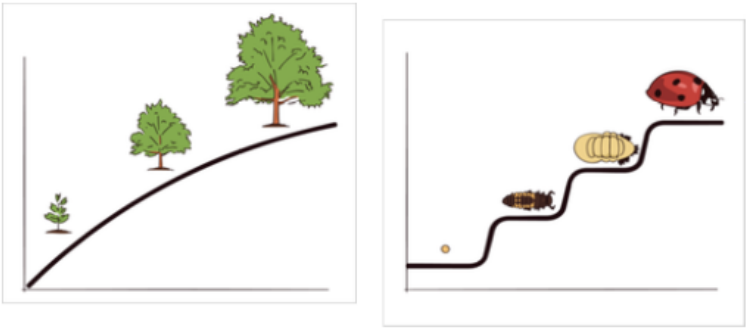


Figure 1.6: The tree represents continuous development, while the ladybug represents discontinuous/stage development.

Continuity versus Discontinuity: Is human development best characterized as a slow, gradual process, or is it best viewed as

one of more abrupt change? The answer to that question often depends on which developmental theorist you ask and what topic is being studied. The theories of Freud, Erikson, Piaget, and Kohlberg are called stage theories. **Stage theories or discontinuous development** *assume that developmental change often occurs in distinct stages that are qualitatively different from each other, and in a set, universal sequence*. At each stage of development, children and adults have different qualities and characteristics. Thus, stage theorists assume development is more discontinuous. Others, such as the behaviorists, Vygotsky, and information processing theorists, *assume development is a more slow and gradual process known as* **continuous development**. For instance, they would see the adult as not possessing new skills, but more advanced skills that were already present in some form in the child. Brain development and environmental experiences contribute to the acquisition of more developed skills.

Active versus Passive: How much do you play a role in your own developmental path? Are you at the whim of your genetic inheritance or the environment that surrounds you? Some theorists see humans as playing a much more active role in their own development. Piaget, for instance believed that children actively explore their world and construct new ways of thinking to explain the things they experience. In contrast, many behaviorists view humans as being more passive in the developmental process.

Stability versus Change: How similar are you to how you were as a child? Were you always as out-going or reserved as you are now? Some theorists argue that the personality traits of adults are rooted in the behavioral and emotional tendencies of the infant and young child. Others disagree, and believe that these initial tendencies are modified by social and cultural forces over time.

1.6: Historical Theories on Development

Preformationist View: Well into the 18th century, children were merely thought of as little adults. **Preformationism**, *or the belief that a tiny, fully formed human is implanted in the sperm or egg at conception and then grows in size until birth*, was the predominant early theory. Children were believed to possess all their sensory capabilities, emotions, and mental aptitude at birth, and as they developed these abilities unfolded on a predetermined schedule (Thomas, 1979). The environment was thought to play no role in determining development.

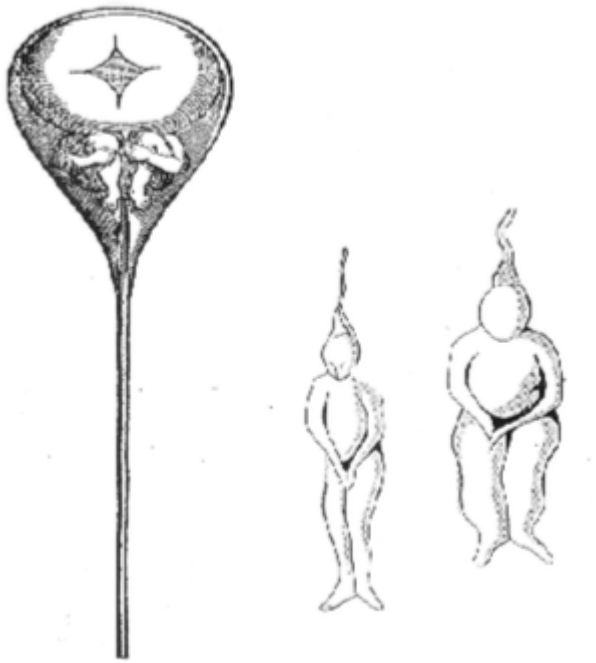


Figure 1.7: A tiny person inside a sperm.

John Locke (1632-1704): Locke, a British philosopher, refuted the idea of innate knowledge and instead proposed that children are largely shaped by their social environments, especially their education as adults teach them important knowledge. He believed that through education a child learns socialization, or what is needed to be an appropriate member of society. Locke advocated thinking of a child's mind as a **Tabula Rosa** or blank slate, and whatever comes into the child's mind comes from the environment. Locke emphasized that the environment is especially powerful in the child's early life because he considered the mind the most pliable then. Locke indicated that the environment exerts its effects through associations between thoughts and feelings, behavioral repetition, imitation, and rewards and punishments (Crain, 2005). Locke's ideas laid the groundwork for the behavioral perspective and subsequent learning theories of Pavlov, Skinner and Bandura.

Jean-Jacques Rousseau (1712-1778): Like Locke, Rousseau also believed that children were not just little adults. However, he did not believe they were blank slates, but instead developed according to a natural plan which unfolded in different stages (Crain, 2005). He did not believe in teaching them the correct way to think, but believed children should be allowed to think by themselves according to their own ways and an inner, biological timetable. This focus on biological maturation resulted in Rousseau being considered the father of developmental psychology. Followers of Rousseau's developmental perspective include Gesell, Montessori, and Piaget.

Arnold Gesell (1880-1961): Gesell spent 50 years at the Yale Clinic of Child Development, and with his colleagues he studied the neuromotor development of children. Gesell believed that the child's development was activated by genes and he called this process maturation (Crain, 2005). Further, he believed that development unfolded in fixed sequences, and he opposed efforts to teach children ahead of schedule as he believed they will engage in behaviors when their nervous systems had sufficiently matured.

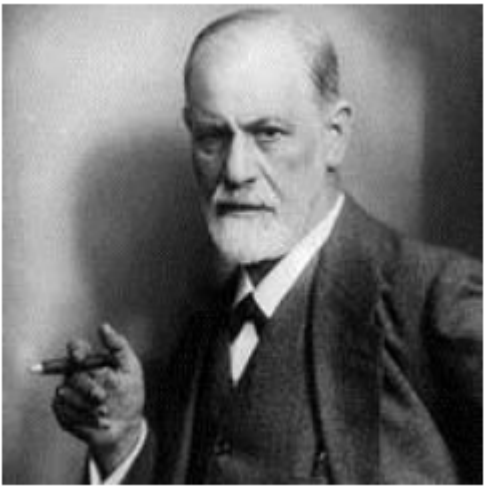


Figure 1.8: Sigmund Freud from *Wikimedia*.

Sigmund Freud (1856-1939): Freud has been a very influential figure in the area of development. Freud emphasized the importance of early childhood experiences in shaping our personality and behavior. In our natural state, we are biological beings. We are driven primarily by instincts. During childhood, however, we begin to become social beings as we learn how to manage our instincts and transform them into socially acceptable behaviors. His view of development and psychopathology dominated the field of psychiatry until the growth of behaviorism in the 1950s. His assumptions that personality forms during the first few years of life and that the ways in which parents or other caregivers interact with children have a long-lasting impact on children's emotional states have guided parents, educators, clinicians, and policy-makers for many years.

Freud's theory has been heavily criticized for several reasons. One is that it is very difficult to test scientifically (Crews, 1998). How can parenting in infancy be traced to personality in adulthood? Freud focuses on the darker side of human nature and suggests that much of what determines our actions is unknown to us. Despite these criticisms, Freud's theory has heuristic value in providing a framework from which to elaborate and modify subsequent theories

of development. Many later theories, particularly behaviorism and humanism, came about as challenges to Freud's views.

1.7: Contemporary Theories on Development

Erikson and Psychosocial Theory: Now, let's turn to a less controversial psychodynamic theorist, Erik Erikson. Erikson presents eight developmental stages that encompass the entire lifespan. For that reason, Erikson's psychosocial theory forms the foundation for much of our discussion of psychosocial development.



Figure 1.9: Erik Erikson.

Erikson (1950) proposed a model of lifespan development that provides a useful guideline for thinking about the changes we experience throughout life. Erikson broke with Freud's emphasis on sexuality as the cornerstone of social-emotional development and instead suggested that social relationships fostered development. Erikson proposed that *each period of life has a unique challenge or crisis that the person who reaches it must face, referred to as* **psychosocial crises**. According to Erikson, successful development involves dealing with and resolving the goals and demands of each

of these psychosocial crises in a positive way. (These crises are usually called *stages*, although that is not the term Erikson used.) If a person does not resolve a stage successfully it may hinder their ability to deal with later stages. For example, the person who does not develop a sense of trust (Erikson's first stage) may find it challenging as an adult to form a positive intimate relationship (Erikson's sixth stage). Or an individual who does not develop a clear sense of purpose and identity (Erikson's fifth stage) may become self-absorbed and stagnate rather than working toward the betterment of others (Erikson's seventh stage). However, most individuals are able to successfully complete the eight stages of his theory (See Table 1.3).

***Table* 1.3: Erikson's Psychological Stages.**

Age Range	Psychosocial crisis	Positive resolution of crisis
Birth to 12 to 18 months	Trust versus Mistrust	The child develops a feeling of trust in his or her caregivers.
18 months to 3 years	Autonomy versus shame/doubt	The child learns what he or she can and cannot control and develops a sense of free will.
3 to 6 years	Initiative versus Guilt	The child learns to become independent by exploring, manipulating, and taking action.
6 to 12 years	Industry versus inferiority	The child learns to do things well or correctly according to standards set by others, particularly in school.
12 to 18 years	Identity versus role confusion	The adolescent develops a well-defined and positive sense of self in relationship to others
19 to 40 years	Intimacy versus isolation	The person develops the ability to give and receive love and to make long-term commitments
40 to 65 years	Generativity versus stagnation	The person develops an interest in guiding the development of the next generation, often by becoming a parent
65 to death	Ego integrity versus despair	The person develops acceptance of his or her life as it was lived.

Erikson's theory has been criticized for focusing so heavily on stages and assuming that the completion of one stage is 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.

Learning Theory: Also known as **Behaviorism**, *is based on the premise that it is not possible to objectively study the mind, and therefore psychologists should limit their attention to the study of behavior itself.* The most famous behaviorist was Burrhus Frederick (B. F.) Skinner (1904– 1990), who expanded the principles of behaviorism and also brought them to the attention of the public at large. Skinner used the ideas of stimulus and response, along with the application of rewards or *reinforcements*, to train pigeons and other animals. In addition, he used the general principles of behaviorism to develop theories about how best to teach children and how to create societies that were peaceful and productive (Skinner, 1957, 1968, 1972).

The behaviorists made substantial contributions to psychology by identifying the principles of *learning*. Although the behaviorists were incorrect in their beliefs that it was not possible to measure thoughts and feelings, their ideas provided new insights that helped further our understanding regarding the nature-nurture debate as well as the question of free will. The ideas of behaviorism are fundamental to psychology and have been developed to help us better understand the role of prior experiences in a variety of areas of psychology.

Social Learning Theory, developed by Albert Bandura (1977), calls our attention to the ways in which many of our actions are not learned through conditioning, as suggested by Skinner; rather, *they are learned by watching others.* Young children frequently learn behaviors through imitation. Especially when children do not know

what else to do, they learn by modeling or copying the behavior of others.

Bandura (1986) suggests that there is interplay between the environment and the individual. We are not just the product of our surroundings, rather we influence our surroundings. *There is interplay between our personality and the way we interpret events and how they influence us. This concept is called* **reciprocal determinism**. An example of this might be the interplay between parents and children. Parents not only influence their child's environment, perhaps intentionally through the use of reinforcement, etc., but children influence parents as well. Parents may respond differently with their first child than with their fourth. Perhaps they try to be the perfect parents with their firstborn, but by the time their last child comes along they have very different expectations, both of themselves and their child. Our environment creates us and we create our environment.

Other social influences: TV or not TV? Bandura et al. (1963) began a series of studies to look at the impact of television on the behavior of children. Bandura began by conducting an experiment in which he showed children a film of a woman hitting an inflatable clown or "bobo" doll.

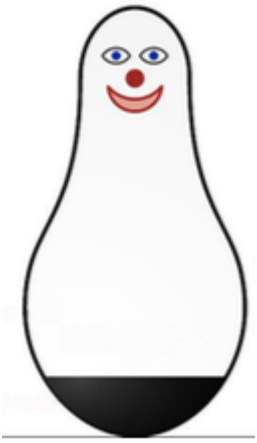


Figure 1.10: The Bobo Doll.

Then the children were allowed in the room, where they found the doll and during their play they began to hit it. The children also demonstrated novel ways of being aggressive toward the doll that were not demonstrated by those children who did not see the aggressive model. Bandura's research raised concerns about the impact of violence on young children. Since then, considerable research has been conducted on the impact of violent media on children's aggression including playing video games.

Cognitive Theory: The **cognitive theories** *focus on how our mental processes or cognitions change over time*. Three important theories are Jean Piaget's, Lev Vygotsky's, and Information-processing.

Jean Piaget (1896-1980) was one of the most influential cognitive theorists in development. He was inspired to explore children's ability to think and reason by watching his own children's development. He was one of the first to recognize and map out the ways in which children's intelligence differs from that of adults (Piaget, 1929). He became interested in this area when he was asked to test the IQ of children and began to notice that there was a pattern in their wrong answers. He believed that children's intellectual skills change over time and that maturation, rather than training, brings about that change. Children of differing ages interpret the world differently. Piaget theorized that children progressed through four stages of cognitive development (Table 1.4).

***Table 1.4*: Piaget's Stages of Cognitive Development.**

Stage	Approximate age range	Characteristics	Stage attainments
Sensorimotor	Birth to about 2 years	The child experiences the world through the fundamental senses of seeing, hearing, touching, and tasting.	Object permanence
Preoperational	2 to 7 years	Children acquire the ability to internally represent the world through language and mental imagery. They also start to see the world from other people's perspectives.	Theory of mind; rapid increase in language ability
Concrete operational	7 to 11 years	Children become able to think logically. They can increasingly perform operations on objects that are real.	Conservation
Formal operational	11 years to adulthood	Adolescents can think systematically, can reason about abstract concepts, and can understand ethics and scientific reasoning.	Abstract logic

Piaget has been criticized for overemphasizing the role that physical maturation plays in cognitive development and in underestimating the role that culture and experience plays. Looking across cultures reveals considerable variation in what children are able to do at various ages. Research has shown considerable overlap among the four stages and that development is more continuous.

Lev Vygotsky (1896–1934) was a Russian psychologist who wrote in the early 1900s but whose work was discovered by researchers in the United States in the 1960s and became more widely known in the 1980s (Crain, 2005). His **sociocultural theory** *emphasizes the importance of culture and interaction in the development of cognitive abilities*. Vygotsky differed with Piaget in that he believed that a person 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. Vygotsky developed theories on teaching that have been adopted by educators today.

Information Processing is not the work of a single theorist, but based on the ideas and research of several cognitive scientists *studying how individuals perceive, analyze, manipulate, use, and remember information*. This approach assumes that humans gradually improve in their processing skills; that is, development is continuous rather than stage-like. The more complex mental skills of adults are built from the primitive abilities of children. We are born with the ability to notice stimuli, store, and retrieve information. Brain maturation enables advancements in our information processing system. At the same time, interactions with the environment also aid in our development of more effective strategies for processing information.

Urie Bronfenbrenner (1917-2005) developed the **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** *includes the individual's setting and those who have direct, significant contact with the person, such as parents or siblings*. 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 him or her.
- **Mesosystem** *includes the larger organizational structures, such as school, the family, or religion.* These institutions impact the microsystems just described. The philosophy of the school system, daily routine, assessment methods, and other characteristics can affect the child's self-image, growth, sense of accomplishment, and schedule thereby impacting the child, physically, cognitively, and emotionally.

- **Exosystem** *includes the larger contexts of community*. A community's values, history, and economy can impact the organizational structures it houses. Mesosystems both influence and are influenced by the exosystem.
- **Macrosystem** *includes the cultural elements,* such as global economic conditions, war, technological trends, values, philosophies, and a society's responses to the global community.
- **Chronosystem** *is the historical context in which these experiences occur.* This relates to the different generational time periods previously discussed such as the baby boomers and millennials.

In sum, a child's experiences are shaped by larger forces such as the family, schools, religion, culture, and time period. Bronfenbrenner's model helps us understand all of the different environments that impact each one of us simultaneously. Despite its comprehensiveness, Bronfenbrenner's ecological system's theory is not easy to use. Taking into consideration all the different influences makes it difficult to research and determine the impact of all the different variables (Dixon, 2003). Consequently, psychologists have not fully adopted this approach, although they recognize the importance of the ecology of the individual. Figure 1.11 is a model of Bronfenbrenner's Ecological Systems Theory.

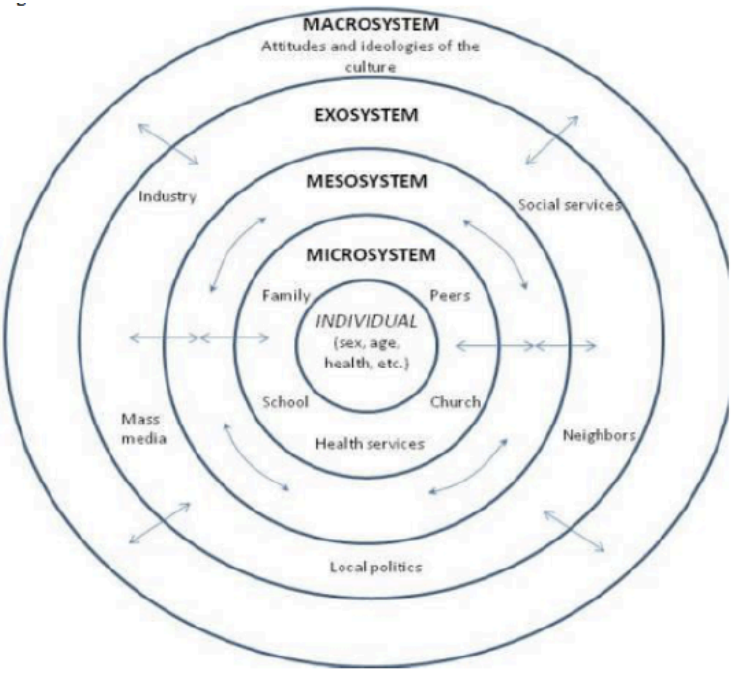


Figure 1.11: Bronfenbrenner's Ecological Systems Theory.

1.8: Research Methods

Learning Objectives

- Define the scientific method
- Compare research methods noting the advantages and disadvantages of each.
- Explain research involving time spans
- Explain ways to conduct ethical research

An important part of learning any science, including psychology, 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. The scientific method is *the set of assumptions, rules, and procedures scientists use to conduct research.*

A **research design** is *the specific method a researcher uses to collect, analyze, and interpret data.* Psychologists use three major types of research designs in their research, and each provides an essential avenue for scientific investigation. **Descriptive research** is *research that describes what is occurring at a particular point in time.* **Correlational research** is *research designed to discover relationships among variables and to allow the prediction of future events from present knowledge.* **Experimental research** is *research in which a researcher manipulates one or more variables to see their effects.* Each of the three research designs varies according to its strengths and limitations.

Descriptive Research

Case Study: Sometimes the data in a descriptive research project are based on only a small set of individuals, often only one person or a single small group. These research designs are known as **case studies** *which are descriptive records of one or a small group of individuals' experiences and behavior*. Sometimes case studies involve ordinary individuals. Developmental psychologist Jean Piaget observed his own children. More frequently, case studies are conducted on individuals who have unusual or abnormal experiences. The assumption is that by carefully studying these individuals, we can learn something about human nature. Case studies have a distinct disadvantage in that, although it allows us to get an idea of what is currently happening, it is usually limited to static pictures. Although descriptions of particular experiences may be interesting, they are not always transferable to other individuals in similar situations. They are also time consuming and expensive as many professionals are involved in gathering the information.

Observations: Another type of descriptive research is known as observation. When using **naturalistic observation**, *psychologists observe and record behavior that occurs in everyday settings*. For instance, a developmental psychologist might watch children on a playground and describe what they say to each other. However, naturalistic observations do not allow the researcher to have any control over the environment.

Laboratory observation, unlike the naturalistic observation, is *conducted in a setting created by the researcher*. This permits the researcher to control more aspects of the situation. One example of laboratory observation involves a systematic procedure known as the *strange situation test*, which you will learn about in chapter three. Concerns regarding laboratory observations are that the participants are aware that they are being watched, and there is no guarantee that the behavior demonstrated in the laboratory will generalize to the real world.

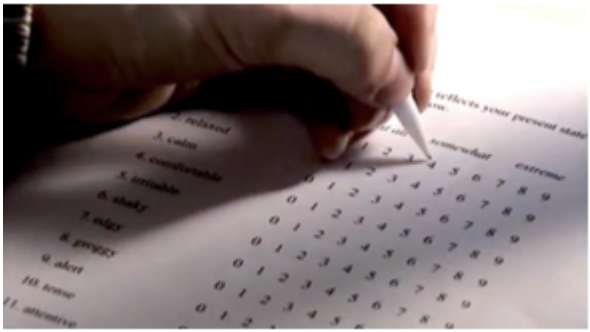


Figure 1.12: How many surveys have you taken?

Survey: In other cases the data from descriptive research projects come in the form of a **survey**, *which is a measure administered through either a verbal or written questionnaire to get a picture of the beliefs or behaviors of a sample of people of interest. The people chosen to participate in the research*, known as the **sample**, are selected to be representative of *all the people that the researcher wishes to know about* called the **population**. A **representative sample** *would include the same percentages of males, females, age groups, ethnic groups, and socio-economic groups as the larger population.*

Surveys gather information from many individuals in a short period of time, which is the greatest benefit for surveys. Additionally, surveys are inexpensive to administer. However, surveys typically yield surface information on a wide variety of factors, but may not allow for in-depth understanding of human behavior. *Another problem is that respondents may lie because they want to present themselves in the most favorable light, known as* **social desirability**. They also may be embarrassed to answer truthfully or are worried that their results will not be kept confidential. Additionally, questions can be perceived differently than intended.

Interviews: Rather than surveying participants, they can be **interviewed** *which means they are directly questioned by a researcher.* Interviewing participants on their behaviors or beliefs

can solve the problem of misinterpreting the questions posed on surveys. The examiner can explain the questions and further probe responses for greater clarity and understanding. Although this can yield more accurate results, interviews take longer and are more expensive to administer than surveys. Participants can also demonstrate social desirability, which will affect the accuracy of the responses.

Psychophysiological Assessment: *Researchers may also record psychophysiological data, such as measures of heart rate, hormone levels, or brain activity to help explain development.* These measures may be recorded by themselves or in combination with behavioral data to better understand the bidirectional relations between biology and behavior. Special equipment has been developed to allow researchers to record the brain activity of very young and very small research subjects. One manner of understanding associations between brain development and behavioral advances is through the recording of event-related potentials (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 stimuli, such as a picture or a sound.



Figure 1.13: Recording of event-related potentials (ERPs).

The use of ERPs has provided important insight as to how infants and children understand the world around them. Webb, Dawson, Bernier, and Panagiotides (2006) 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 brainwaves. Findings suggest that children with autism are in some way processing faces differently than typically developing children and those with more general developmental delays.

Secondary/Content Analysis *involves analyzing information that has already been collected or examining documents or media to uncover attitudes, practices or preferences.* There are a number of data sets available to those who wish to conduct this type of research. For example, the U. S. Census Data is available and widely used to look at trends and changes taking place in the United States. The researcher conducting secondary analysis does not have to recruit subjects, but does need to know the quality of the information collected in the original study.

Conditional Research

In contrast to descriptive research, which is designed primarily to provide static pictures, correlational research involves the measurement of two or more relevant variables and an assessment of the relationship between or among those variables. For instance, the variables of height and weight are systematically related (correlated) because taller people generally weigh more than shorter people.

The **Pearson Correlation Coefficient**, *symbolized by the letter r,*

is the most common statistical measure of the strength of linear relationships among variables. The value of the correlation coefficient ranges from r= −1.00 to r = +1.00. The strength of the linear relationship is indexed by the distance of the correlation coefficient from zero (its absolute value). For instance, r = −.54 is a stronger relationship than r= .30, and r = .72 is a stronger relationship than r = −.57. The direction of the linear relationship is indicated by the sign of the correlation coefficient. Positive values of r (such as r = .54 or r = .67) indicate that the relationship is positive (i.e., the pattern of the dots on the scatter plot runs from the lower left to the upper right), whereas negative values of r (such as r = −.30 or r = −.72) indicate negative relationships (i.e., the dots run from the upper left to the lower right).

W*hen the straight line indicates that individuals who have high values for one variable also tend to have high values for the other variable*, as in part (a), the relationship is said to be ***positive correlation***. Examples of positive correlations include those between education and income, and between age and mathematical abilities in children. In each case people who score higher on one of the variables also tend to score higher
on the other variable. ***Negative correlations***, in contrast, as shown in part (b), *occur when high values for one variable tend to be associated with low values for the other varia*ble. Examples of negative correlations include those between the age of a child and the number of diapers the child uses, and between practice and errors made on a learning task. In these cases people who score higher on one of the variables tend to score lower on the other variable.

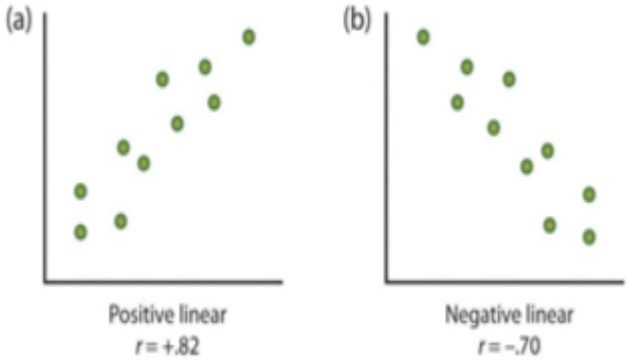


Figure 1.14: Some examples of relationships between two variables as shown in scatter plots.

An important limitation of correlational research designs is that they cannot be used to draw conclusions about the causal relationships among the measured variables. Consider, for instance, a researcher who has hypothesized that viewing violent behavior will cause increased aggressive play in children. He has collected, from a sample of fourth-grade children, a measure of how much violent television each child views during the week, as well as a measure of how aggressively each child plays. The researcher discovers a positive correlation between the two measured variables. Although this positive correlation appears to support the hypothesis, it cannot be taken to indicate that viewing violent television causes aggressive behavior as there are other possible explanations. One alternative is that children who behaved aggressively at school want to watch violent television shows. Still another possible explanation for the observed correlation is that it has been produced by the presence of a *third variable*.

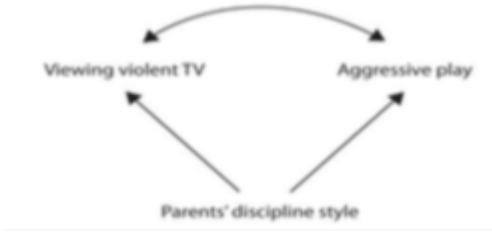


Figure 1.15: The presence of a third variable in a positive correlation.

A **third variable** is *a variable that is not part of the research hypothesis but produces the observed correlation between them.* In our example a potential third variable is the discipline style of the children's parents. Parents who use a harsh and punitive discipline style may produce children who both like to watch violent television and who behave aggressively in comparison to children whose parents use less harsh discipline.

For this reason, we are left with the basic limitation of correlational research: **Correlation does not demonstrate causation!** It is important that when you read about correlational research projects, you keep in mind the possibility of third variables.

Strengths and limitations: Correlational research can be used when experimental research is not possible because the variables cannot be manipulated or it would be unethical to use an experiment. Correlational designs also have the advantage of allowing the researcher to study behavior as it occurs in everyday life. We can also use correlational designs to make predictions. For instance, we can predict from the scores on a battery of tests the success of job trainees during a training session. However, we cannot use such correlational information to determine whether one variable caused another variable. For that, researchers rely on an experiment.

Experimental Research

The goal of the **experimental method** is to provide more definitive conclusions about the causal relationships among the variables in a research hypothesis than what is available from correlational research. Experiments are designed to test **hypotheses**, or *specific statements about the relationship between variables.* Experiments are conducted in a controlled setting in an effort to explain how certain factors or events produce outcomes. A **variable** is *anything that changes in value*. In the experimental research design, the variables of interest are called the independent variable and the dependent variable. The **independent variable** *in an experiment is the causing variable that is created or manipulated by the experimenter*. The **dependent variable** *in an experiment is a measured variable that is expected to be influenced by the experimental manipulation.*

A good experiment randomly assigns participants to at least two groups that are compared. The **experimental group** receives the treatment under investigation, while the **control group** does not receive the treatment the experimenter is studying as a comparison. For instance, to assess whether violent TV affects aggressive behavior the experimental group might view a violent television show, while the control group watches a non-violent show. Additionally, experimental designs control for **extraneous variables**, or *variables that are not part of the experiment that could inadvertently effect either the experimental or control group, thus distorting the results.*

Despite the advantage of determining causation, experiments do have limitations. One is that they are often conducted in laboratory situations rather than in the everyday lives of people. Therefore, we do not know whether results that we find in a laboratory setting will necessarily hold up in everyday life. Second, and more important, is that some of the most interesting and key social variables cannot be experimentally manipulated because of ethical concerns. If we want to study the influence of abuse on children's development of

depression, these relationships must be assessed using correlational designs because it is simply not ethical to experimentally manipulate these variables. Characteristics of descriptive, correlational, and experimental research designs can be found in Table 1.5.

***Table* 1.5: Descriptive, correlational, and experimental research designs.**

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

1.9: Research Involving Time-Spans

Cross-sectional research *compares samples that represent a cross-section of the population who vary in age.* Participants might be asked to complete a survey or take a test of some physical or cognitive skill. The attitudes or skill levels based on age are compared. In cross-sectional research, respondents are measured only once, and consequently this method is not expensive or time consuming. In addition, because participants are only tested at one point in time, practice effects are not an issue as children do not have the opportunity to become better at the task over time. There is also no need to keep in contact with, or follow-up with, participants over time.

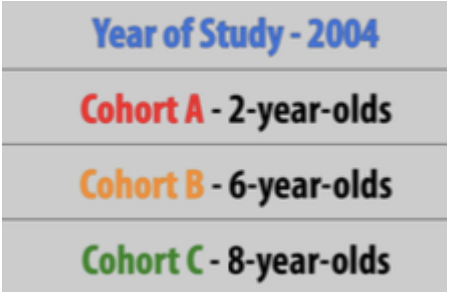


Figure 1.16: Cross-sectional research.

However, cross-sectional research does not allow the researcher to look at the *impact of having been born in a certain time-period, which is known as the* **cohort effect**. For example, those born during the depression have very different views about and experiences with the internet than those born in the last twenty years. Different attitudes about the Internet, for example, might not be due to a person's biological age as much as their life experiences as members of a cohort.

Longitudinal research *involves studying a group of people who*

are the same age, and measuring them repeatedly over a period-of-time. This type of design allows researchers to study individual differences in development. Longitudinal studies may be conducted over the short term, such as a span of months, or over much longer durations including years or decades. For these reasons, longitudinal research designs are optimal for studying stability and change over time.

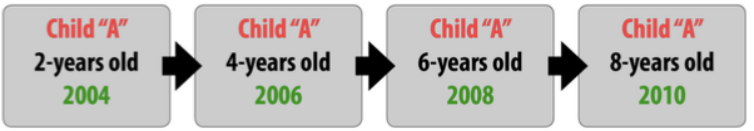


Figure 1.17: Longitudinal research.

Problems with longitudinal research include being very time consuming and expensive. Researchers must maintain continued contact with participants over time, and these studies necessitate that scientists have funding to conduct their work over extended durations. 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. Even with a large sample size, the experimenter never knows if there was something different about the individuals who dropped out versus those that remained in the study.

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.

Sequential research *includes 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 individuals of different ages are enrolled into a study at various points in time to examine age-related changes, development within the same individuals as they age, and account for the possibility of cohort effects.

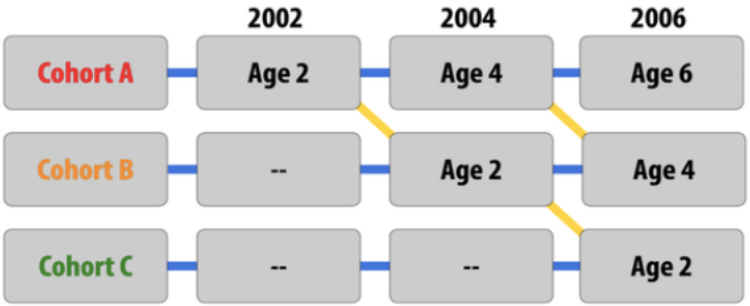


Figure 1.18: Sequential research.

For example, 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. This is 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. Sequential designs are appealing because they allow researchers to learn a lot about development in a relatively short amount of time. In this 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. Table 1.6 identifies advantages and disadvantages for each of the described time span research design.

***Table* 1.6: Lon**

	Advantages
Longitudinal	• Examines changes within individuals over time • Provides a developmental analysis
Cross-sectional	• Examines changes between participants of different age • Provide information on age-related change
Sequential	• Examines changes within individuals over time • Examines changes between participants of different age • Can be used to examine cohort effects

1.10: Experimental Research

Conducting Ethical Research

One of the issues that all scientists must address concerns the ethics of their research. Research in psychology may cause some stress, harm, or inconvenience for the people who participate in that research.Psychologistsmayinducestress,anxiety,ornegativemoodsin their participants, expose them to weak electrical shocks, or convince them to behave in ways that violate their moral standards. Additionally researchers may sometimes use animals, potentially harming them in the process.Decisions about whether research is ethical are made using established ethical codes developed by scientific organizations, such as the American Psychological Association, and federal governments. In the United States, the Department of Health and Human Services provides the guidelines for ethical standards in research. The following are the American Psychological Association code of ethics when using humans in research (APA, 2002).

- **No Harm:** The most direct ethical concern of the scientist is to prevent harm to the research participants.
- **Informed Consent:** Researchers must obtain **informed consent**, which *explains as much as possible about the true nature of the study, particularly everything that might be expected to influence willingness to participate*. Participants can withdraw their consent to participate at any point.

Infants and young children cannot verbally indicate their willingness to participate, much less understand the balance of potential risks and benefits. As such, researchers are oftentimes required to obtain written informed consent from the parent or legal guardian of the child participant. Further, this adult is almost always present as the study is conducted. Children are not asked

to indicate whether they would like to be involved in a study 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, such as determining whether a child is too tired or upset to continue, as well as to what the parent desires. In some cases, parents might want to discontinue their involvement in the research. As in adult studies, researchers must always strive to protect the rights and well- being of the minor participants and their parents when conducting developmental research.

- **Confidentiality:** Researchers must also protect the privacy of the research participants' responses by not using names or other information that could identify the participants.
- **Deception: Deception** *occurs whenever research participants are not completely and fully informed about the nature of the research project before participating in it*. Deception may occur when the researcher tells the participants that a study is about one thing when in fact it is about something else, or when participants are not told about the hypothesis.
- **Debriefing:** At the end of a study **debriefing**, *which is a procedure designed to fully explain the purposes and procedures of the research and remove any harmful aftereffects of participation*, must occur.

1.11: Test your knowledge



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2: HEREDITY, PRENATAL DEVELOPMENT, AND BIRTH

Learning Objectives: Heredity

- Define genes
- Distinguish between mitosis and meiosis, genotype and phenotype, homozygous and heterozygous, and dominant and recessive
- Describe some genetic disorders, due to a gene defect, and chromosomal disorders
- Define polygenic and incomplete dominance
- Describe the function of genetic counseling and why individuals may seek genetic counseling
- Define behavioral genetics, describe genotype-environment correlations and genotype-environmental interactions, and define epigenetics

In this chapter, we will begin by examining some of the ways in which heredity helps to shape the way we are. We will look at what happens genetically during conception, and describe some known genetic and chromosomal disorders. Next we will consider what happens during prenatal development, including the impact of teratogens. We will also discuss the impact that both the mother and father have on the developing fetus. Next we will present the birth process and some of the complications that can occur during delivery. Before going into these topics, however, it is important to understand how genes and chromosomes affect development.

2.1: Heredity

As your recall from chapter one, nature refers to the contribution of genetics to one's development. The basic building block of the nature perspective is the gene. **Genes** are *recipes for making proteins*, while proteins influence the structure and functions of cells. Genes are located on the chromosomes and there are an estimated 20,500 genes for humans, according to the Human Genome Project (NIH, 2015). See Box 2.2 at the end of this section for more details on the Human Genome Project.

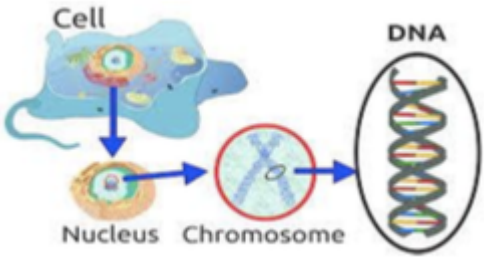


Figure 2.1: Genes are located on chromosomes.

Normal human cells contain 46 chromosomes (or 23 pairs; one from each parent) in the nucleus of the cells. After conception, most cells of the body are created by a process called mitosis. **Mitosis** *is defined as the cell's nucleus making an exact copy of all the chromosomes and splitting into two new cells*. However, the cells used in sexual reproduction, called the gametes (sperm or ova), are formed in a process called meiosis. In **meiosis** *the gamete's chromosomes duplicate, and then divide twice resulting in four cells containing only half the genetic material of the original gamete.* Thus, each sperm and egg possesses only 23 chromosomes and combine to produce the normal 46. See Figure 2.2 for details on both mitosis and meiosis. Given the amount of genes present and the unpredictability of the meiosis process, the likelihood of having

offspring that are genetically identical (and not twins) is one in trillions (Gould & Keeton, 1997).

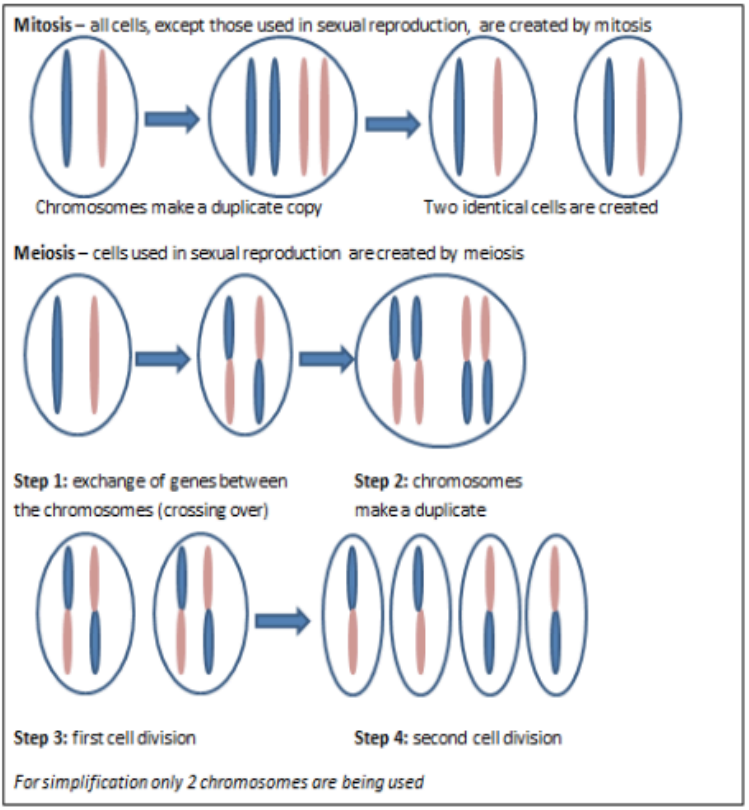


Figure 2.2: Mitosis vs. Meiosis.

Of the 23 pairs of chromosomes created at conception, 22 pairs are similar in length. These are called autosomes. The remaining pair, or sex chromosomes, may differ in length. If a child receives the combination of XY the child will be genetically male. If the child receives the combination XX the child will be genetically female.

2.2: 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*. Look in the mirror. What do you see, your genotype or your phenotype? What determines whether or not genes are expressed? Because genes are inherited in pairs on the chromosomes, *we may receive either the same version of a gene from our mother and father, that is, be* **homozygous** for that characteristic the gene influences. *If we receive a different version of the gene from each parent, that is referred to as* **heterozygous.** In the homozygous situation we will display that characteristic. It is in the heterozygous condition that it becomes clear that not all genes are created equal. Some genes are **dominant**, meaning they *express themselves in the phenotype even when paired with a different version of the gene*, while their silent partner is called recessive. **Recessive** genes *express themselves only when paired with a similar version gene*. Geneticists refer to *different versions of a gene as* **alleles.** Some dominant traits include having facial dimples, curly hair, normal vision, and dark hair. Some recessive traits include red hair, being nearsighted, and straight hair.

Most characteristics are not the result of a single gene; they are **polygenic**, *meaning they are the result of several genes*. In addition, the dominant and recessive patterns described above are usually not that simple either. *Sometimes the dominant gene does not completely suppress the recessive gene; this is called* **incomplete dominance**. An example of this can be found in the recessive gene disorder sickle cell disease. The gene that produces healthy round-shaped red blood cells is dominant. The recessive gene causes an abnormality in the shape of red blood cells; they take on a sickle form, which can clog the veins and deprive vital organs of oxygen

and increase the risk of stroke. To inherit the disorder a person must receive the recessive gene from both parents. *Those who have inherited only one recessive-gene are called* **carriers** and should be unaffected by this recessive trait. Yet, carriers of sickle cell have some red blood cells that take on the c-shaped sickle pattern. Under circumstances of oxygen deprivation, such as high altitudes or physical exertion, carriers for the sickle cell gene may experience some of the symptoms of sickle cell (Berk, 2004).

Box 2.1 Monozygotic and dizygotic twins

Many students are interested in twins. **Monozygotic** *or identical twins occur when a fertilized egg splits apart in the first two weeks of development.* The result is the creation of two separate, but genetically identical offspring. That is, they possess the same genotype and often the same phenotype. About one-third of twins are monozygotic twins. Sometimes, however, *two eggs or ova are released and fertilized by two separate sperm. The result is* **dizygotic** *or fraternal twins.* These two individuals share the same amount of genetic material as would any two children from the same mother and father. In other words, they possess a different genotype and phenotype. 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 recently (Bortolus et al., 1999).





Monozygotic Twins versus Dizygotic twins.

2.3: Genetic Disorders

Most of the known genetic disorders are dominant gene-linked; however, the vast majority of dominant gene linked disorders are not serious or debilitating. For example, the majority of those with Tourette's Syndrome suffer only minor tics from time to time and can easily control their symptoms. Huntington's Disease is a dominant gene linked disorder that affects the nervous system and is fatal, but does not appear until midlife. Recessive gene disorders, such as cystic fibrosis and sickle-cell anemia, are less common but may actually claim more lives because they are less likely to be detected as people are unaware that they are carriers of the disease. Some genetic disorders are **sex-linked**; *the defective gene is found on the X-chromosome*. Males have only one X chromosome so are at greater risk for sex-linked disorders due to a recessive gene, such as hemophilia, color-blindness, and baldness. For females to be affected by the genetic defects, they need to inherit the recessive gene on both X-chromosomes, but if the defective gene is dominant, females can be equally at risk. Table 2.1 lists several genetic disorders.

Recessive disorders (homozygous): the individual inherits a gene change from both pare co
Sickle Cell Disease (SCD) is a condition in which the red blood cells in the body are shape Carriers may experience some effects but do not have the full condition.
Cystic Fibrosis (CF) is a condition that affects breathing and digestion due to thick mucus thicker than normal and sticky.
Phenylketonuria (PKU) is a metabolic disorder in which the individual cannot metabolize detected and is treated with a special diet.
Tay Sachs Disease is caused by enzyme deficiency resulting in the accumulation of lipids and a decrease in cognitive and physical development. Death typically occurs by age five.

Recessive disorders (homozygous): the individual inherits a gene change from both pare co
Albinism is when the individual lacks melanin and possesses little to no pigment in the sk

Autosomal Dominant Disorders (heterozygous): In order to have the dis
Huntington's Disease is a condition that affects the individual's nervous system. Nerve ce movement, behavior, and cognition. It is fatal and occurs at midlife.
Tourette Syndron is a tic disorder which results in uncontrollable motor and vocal tics as
Achondroplasia is the most common form of disproportionate short stature. The individu legs, short fingers, a large heard, and specific facial features.

Sex-Linked Disorders: When the X chromosome carries the mutated gene, the disorde
possess only one X chromosome without an add

Fragile X Syndrome occurs when the body cannot make enough of a protein it needs for
caused from an abnormality in the X chromosome, which then breaks. If a female has frag
second healthy X chromosome. This is why symptoms of fragile X syndrome are usually m

Hemophilia occurs when there are problems in blood clotting, causing both internal and

Duchenne Muscular Dystrophy is a weakening of the muscles, resulting in an inability to

2.4: Chromosomal Abnormalities

A **chromosomal abnormality** *occurs when a child inherits too many or two few chromosomes*. The most common cause of chromosomal abnormalities is the age of the mother. As the mother ages, the ovum is more likely to suffer abnormalities due to longer term exposure to environmental factors. Consequently, some gametes do not divide evenly when they are forming. Therefore, some cells have more than 46 chromosomes. In fact, it is believed that close to half of all zygotes have an odd number of chromosomes. Most of these zygotes fail to develop and are spontaneously aborted by the mother's body.

One of the most common chromosomal abnormalities is on pair 21. **Trisomy 21 or Down Syndrome** *occurs when there are three rather than two 21st chromosomes.* A person with Down Syndrome typically exhibits an intellectual disability and possesses certain physical features, such as short fingers and toes, folds of skin over the eyes, and a protruding tongue. There is as much variation in people with Down Syndrome as in most populations, and those differences need to be recognized and appreciated. Other less common chromosomal abnormalities of live-born infants occur on chromosome 13 and chromosome 18. Refer to Table 2.2 on the prevalence of these chromosomal disorders in our home state of Illinois.

***Table 2.2*: Illinois Prevalence Rates (2007-2011) for Trisomy 13, 18, and 21 based on Maternal Age.**

Chromosomal Disorder	Age<35 Prevalence Rate	Age>35 Prevalence Rate	Total Prevalence
Trisomy 13	1.0 per 10,000	4.3 per 10,000	1.6 per 10,000
Trisomy 18	0.9 per 10,000	8.3 per 10,000	2.0 per 10,000
Trisomy 21	6.9 per 10,000	43.7 per 10,000	12.7 per 10,000

When the abnormality is on 23rd pair the result is a **sex-linked chromosomal abnormality**. A person might have XXY, XYY, XXX, XO. Two of the more common sex-linked chromosomal disorders are Turner Syndrome and Klinefelter Syndrome. **Turner Syndrome** *occurs when part or all of one of the* X *chromosomes is lost and the resulting zygote has an* XO *composition.* This occurs in 1 of every 2,500 live female births (Carroll, 2007) and affects the individual's cognitive functioning and sexual maturation. The external genitalia appear normal, but breasts and ovaries do not develop fully and the woman does not menstruate. Turner's syndrome also results in short stature and other physical characteristics. **Klinefelter Syndrome (XXY)** *results when an extra* X *chromosome is present in the cells of a male* and occurs in 1 out of 700 live male births. The Y chromosome stimulates the growth of male genitalia, but the additional X chromosome inhibits this development. An individual with Klinefelter Syndrome has some breast development, infertility (this is the most common cause of infertility in males), and has low levels of testosterone. See Table 2.3 for Chromosomal Disorders descriptions.

***Table* 2.3: Chromosomal Disorders.**

Autosomal Chromosome Disorders: The individual inherits too many or two few chromosomes	**Cases per Birth**
• **Down Syndrome/Trisomy 21** is caused by an extra chromosome 21 and includes a combination of birth defects. Affected individuals have some degree of intellectual disability, characteristic facial features, often heart defects, and other health problems. The severity varies greatly among affected individuals.	1 in 691; 1 in 300 births at age 35
• **Trisomy 13** is caused by an extra chromosome 13. Affected individuals have multiple birth defects and generally die in the first weeks or months of life.	1 in 7,906
• **Trisomy 18** is caused by an extra chromosome 18 and the affected individual also has multiple birth defects and early death.	1 in 3,762
Sex-Linked Chromosomal Disorders: The disorder occurs on chromosome pair #23 or the sex chromosomes.	**Cases per Birth**
• **Turner Syndrome** is caused when all or part of one of the X chromosomes is lost before or soon after conception due to a random event. The resulting zygote has an XO composition. Turner Syndrome affects cognitive functioning and sexual maturation in girls. Infertility and a short stature may be noted.	1 in 2500 females
• **Klinefelter Syndrome** is caused when an extra X chromosome is present in the cells of a male due to a random event. The Y chromosome stimulates the growth of male genitalia, but the additional X chromosome inhibits this development. The male can have some breast development, infertility, and low levels of testosterone.	1 in 700 males

Genetic Counseling: Genetic counseling refers to *a service that assists individuals identify, test for, and explain potential genetic*

conditions that could adversely affect themselves or their offspring (CDC, 2015b). The common reasons for genetic counseling include:

- Family history of a genetic condition
- Membership in a certain ethnic group with a higher risk of a genetic condition
- Information regarding the results of genetic testing, including blood tests, amniocentesis, or ultra sounds
- Learning about the chances of having a baby with a genetic condition if the mother is older, has had several miscarriages, has offspring with birth defects, experiences infertility, or has a medical condition

2.5: Behavioral Genetics

Behavioral Genetics *is the scientific study of the interplay between the genetic and environmental contributions to behavior.* Often referred to as the nature/nurture debate, Gottlieb (1998, 2000, 2002) suggests an analytic framework for this debate that recognizes the interplay between the environment, behavior, and genetic expression. This bidirectional interplay suggests that the environment can affect the expression of genes just as genetic predispositions can impact a person's potentials. Additionally, environmental circumstances can trigger symptoms of a genetic disorder. For example, a person who has sickle cell anemia, a recessive gene linked disorder, can experience a sickle cell crisis under conditions of oxygen deprivation. Someone predisposed genetically for type-two diabetes can trigger the disease through poor diet and little exercise.

Research has shown how the environment and genotype interact in several ways. **Genotype-Environment Correlations** *refer to the processes by which genetic factors contribute to variations in the environment* (Plomin, DeFries, Knopik, & Niederhiser, 2013). There are three types of genotype-environment correlations: **Passive genotype-environment correlation** *occurs when children passively inherit the genes and the environments their family provides.* Certain behavioral characteristics, such as being athletically inclined, may run in families. The children have inherited both the genes that would enable success at these activities, and given the environmental encouragement to engage in these actions. Figure 2.3 highlights this correlation by demonstrating how a family passes on water skiing skills through both genetics and environmental opportunities.



Figure 2.3: Water skiing skills are passed on through both genetics and environmental opportunities.

Evocative genotype-environment correlation *refers to how the social environment reacts to individuals based on their inherited characteristics.* For example, whether one has a more outgoing or shy temperament will affect how he or she is treated by others.

Active genotype-environment correlation *occurs when individuals seek out environments that support their genetic tendencies.* This is also referred to as *niche picking*. For example, children who are musically inclined seek out music instruction and opportunities that facilitate their natural musical ability.

Conversely, **Genotype-Environment Interactions** *involve genetic susceptibility to the environment.* Adoption studies provide evidence for genotype-environment interactions. For example, the Early Growth and Development Study (Leve, Neiderhiser, Scaramella, & Reiss, 2010) followed 360 adopted children and their adopted and biological parents in a longitudinal study. Results have shown that children whose biological parents exhibited psychopathology, exhibited significantly fewer behavior problems when their adoptive

parents used more structured parenting than unstructured. Additionally, elevated psychopathology in adoptive parents increased the risk for the children's development of behavior problems, but only when the biological parents' psychopathology was high. Consequently, the results show how environmental effects on behavior differ based on the genotype, especially stressful environments on genetically at-risk children.

Lastly, **Epigenetics** *studies modifications in DNA that affect gene expression and are passed on when the cells divide*. Environmental factors, such as nutrition, stress, and teratogens are thought to change gene expression by switching genes on and off. These gene changes can then be inherited by daughter cells. This would explain why monozygotic or identical twins may increasingly differ in gene expression with age. For example, Fraga et al. (2005) found that when examining differences in DNA, a group of monozygotic twins were indistinguishable during the early years. However, when the twins were older there were significant discrepancies in their gene expression, most likely due to different experiences. These differences included susceptibilities to disease and a range of personal characteristics.

Box 2.2 The Human Genome Project

In 1990 the Human Genome Project (HGP), an international scientific endeavor, began the task of sequencing the 3 billion base pairs that make up the human genome. In April of 2003, more than two years ahead of schedule, scientists have given us the genetic blueprint for building a human. Since this time, using the information from the HGP, researchers have discovered the genes involved in over 1800 diseases. In 2005 the HGP amassed a large data base called HapMap that catalogs the genetic variations in 11 global populations. Data on genetic variation can improve our understanding of differential risk for disease and reactions to medical treatments, such as drugs. Pharmacogenomic researchers have already developed tests to determine whether a patient will respond favorably to certain drugs used in the treatment of breast cancer or HIV by using information from HapMap (NIH, 2015).

Future directions for the HGP include identifying the genetic markers for all 50 major forms of cancer (The Cancer Genome Atlas), continued use of the HapMap for creating more effective drugs for the treatment of disease, and examining the legal, social and ethical implications of genetic knowledge (NIH, 2015).

From the outset, the HGP made ethical issues one of their main concerns. Part of the HGP's budget supports research and holds workshops that address these concerns. Who owns this information, and how the availability of genetic information may influence healthcare and its impact on individuals, their families, and the greater community are just some of the many questions being addressed (NIH, 2015).

2.6: Prenatal Development

Learning Objectives: Prenatal Development

- Describe the changes that occur in the three periods of prenatal development
- Describe what occurs during prenatal brain development
- Define teratogens and describe the factors that influence their effects
- List and describe the effects of several common teratogens
- Explain maternal and paternal factors that affect the developing fetus
- Explain the types of prenatal assessment
- Describe both the minor and major complications of pregnancy

Now we turn our attention to prenatal development which is divided into three periods: The germinal period, the embryonic period, and the fetal period. The following 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 fertilized egg in the lining of the uterus (Figure 2.4). At ejaculation millions of sperm are released into the vagina, but only a few reach the egg and typically only one fertilizes the egg. Once a single sperm has entered the wall of the egg, the wall becomes hard and prevents other sperm from entering. After the sperm has entered the egg, the tail of the sperm breaks off and the head of the sperm, containing the genetic information from the father, unites with the nucleus of the egg. It is typically fertilized in

the top section of the fallopian tube and continues its journey to the uterus. As a result, a new cell is formed. *This cell, containing the combined genetic information from both parents*, is referred to as a **zygote.**

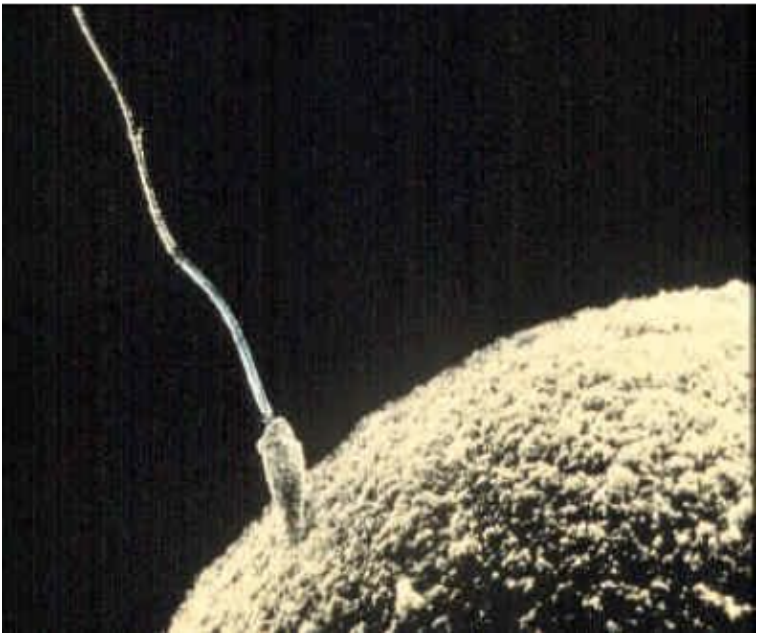


Figure 2.4: Sperm and Ovum at Conception.

During this time, the organism begins cell division through mitosis. After five days of mitosis there are 100 cells, which is now called a **blastocyst**. *The blastocyst consists of both an inner and outer group of cells. The inner group of cells, or* **embryonic disk** *will become the embryo*, while *the outer group of cells*, or **trophoblast**, *becomes the support system which nourishes the developing organism*. This stage ends when the blastocyst fully implants into the uterine wall (U.S. National Library of Medicine, 2015).

Mitosis is a fragile process and fewer than one half of all zygotes survive beyond the first two weeks (Hall, 2004). Some of the reasons for this include the egg and sperm do not join properly, thus their

genetic material does not combine, there is too little or damaged genetic material, the zygote does not replicate, or the blastocyst does not implant into the uterine wall. The failure rate is higher for in vitro conceptions. Figure 2.5 illustrates the journey of the ova from its release to its fertilization, cell duplication, and implantation into the uterine lining.

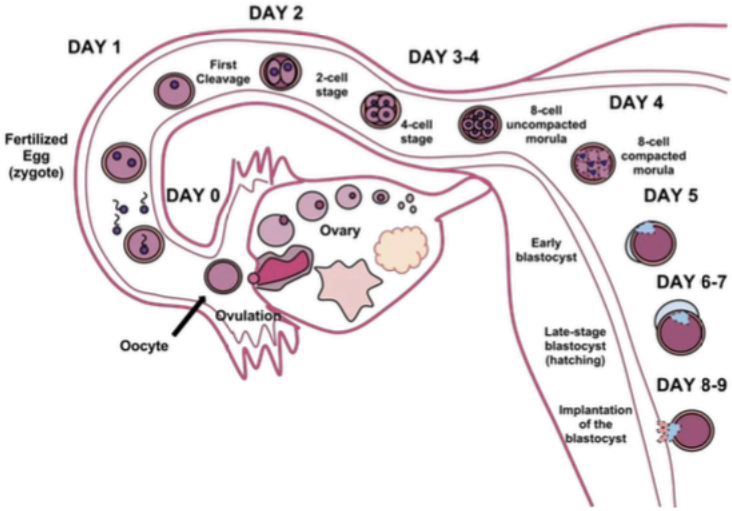


Figure 2.5: "Human Fertilization" by Ttrue12.

The Embryonic Period

Starting the third week the blastocyst has implanted in the uterine wall. *Upon implantation this multi-cellular organism* is called an **embryo**. Now blood vessels grow forming the **placenta**. *The placenta is a structure connected to the uterus that provides nourishment and oxygen from the mother to the developing embryo via the umbilical cord.* During this period, cells continue to differentiate. Growth during prenatal development occurs in two major directions: *from head to tail* called **cephalocaudal development** and *from the midline*

outward referred to as **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. However, by the end of this stage they disappear and the organism takes on a more human appearance. About 20 percent of organisms fail during the embryonic period, usually due to gross chromosomal abnormalities. As in the case of the germinal period, often the mother does not yet know that she is pregnant. It is during this stage that the major structures of the body are taking form making the embryonic period the time when the organism is most vulnerable to the greatest amount of damage if exposed to harmful substances. Potential mothers are not often aware of the risks they introduce to the developing embryo during this time. The embryo is approximately 1 inch in length and weighs about 4 grams at the end of eight weeks. The embryo can move and respond to touch at this time.



Figure 2.6: The Embryo. Photo by Lunar Caustic.

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 third month, 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. The fetus is about 3 inches long and weighs about 28 grams.



Figure 2.7: Fetus.

During the 4^{th} – 6^{th} months, the eyes become more sensitive to light and hearing develops. The respiratory system continues to develop, and reflexes such as sucking, swallowing and hiccupping, develop

during the 5th month. Cycles of sleep and wakefulness are present at this time as well. *The first chance of survival outside the womb, known as the* **age of viability** *is reached at about 24 weeks* (Morgan, Goldenberg, & Schulkin, 2008). Many practitioners hesitate to resuscitate 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. At 24 weeks the fetus can feel pain (Royal College of Obstetricians and Gynecologists, 1997).

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

At around 36 weeks the fetus is almost ready for birth. It weighs about 6 pounds and is about 18.5 inches long. By week 37 all of the fetus's organ systems are developed enough that it could survive outside the mother's uterus without many of the risks associated with premature birth. The fetus continues to gain weight and grow in length until approximately 40 weeks. By then the fetus has very little room to move around and birth becomes imminent. The progression through the stages is shown in Figure 2.8.



Figure 2.8: Prenatal Development Age Milestones.

Prenatal Brain Development

Prenatal brain development begins in the third gestational week with the differentiation of stem cells, which are capable of producing all the different cells that make up the brain (Stiles & Jernigan, 2010). *The location of these stem cells in the embryo is referred to as the* neural plate. By the end of the third week, two ridges appear along the neural plate first forming the neural groove and then the neural tube. The open region in the center of the

neural tube forms the brain's ventricles and spinal canal. By the end of the embryonic period, or week eight, the neural tube has further differentiated into the forebrain, midbrain, and hindbrain.

Brain development during the fetal period involves neuron production, migration, and differentiation. From the early fetal period until midgestation, most of the 85 billion neurons have been generated and many have already migrated to their brain positions. **Neurogenesis,** or *the formation of neurons*, is largely completed after five months of gestation. One exception is in the hippocampus, which continues to develop neurons throughout life. Neurons that form the neocortex, or the layer of cells that lie on the surface of the brain, migrate to their location in an orderly way. Neural migration is mostly completed by 29 weeks. Once in position neurons begin to produce dendrites and axons that begin to form the neural networks responsible for information processing. *Regions of the brain that contain the cell bodies are referred to as the* **Gray Matter** because they look gray in appearance. *The axons that form the neural pathways make up the* **White Matter** because they are covered in myelin, a fatty substance that is white in appearance. Myelin aids in both the insulation and efficiency of neural transmission. Although cell differentiation is complete at birth, the growth of dendrites, axons, and synapses continue for years.

2.7: Teratogens

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 environmental factors that can contribute to birth defects*, and 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, 2005). 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.
- **The number of teratogens**: Fetuses exposed to multiple teratogens typically have more problems than those exposed to only one.
- **Genetics:** Genetic make-up also plays a role on the impact a particular teratogen might have on the child. This is suggested by fraternal twins exposed to the same prenatal environment, but they do not experience the same teratogenic effects. The

genetic make- up of the mother can also have an effect; some mothers may be more resistant to teratogenic effects than others.

- **Being male or female**: Males are more likely to experience damage due to teratogens than are females. It is believed that the Y chromosome, which contains fewer genes than the X, may have an impact.

Figure 2.9 illustrates the timing of teratogen exposure and the types of structural defects that can occur during the prenatal period.

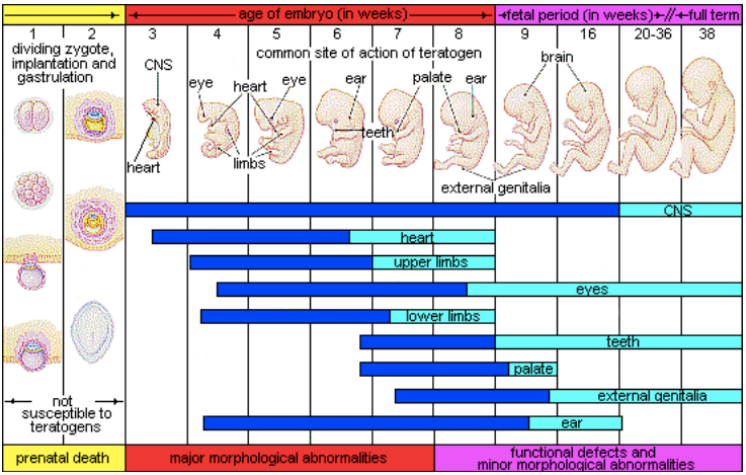
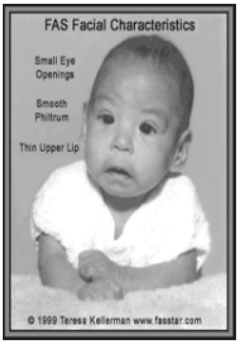


Figure 2.9: Critical Periods of Prenatal Development.

Alcohol: 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 (CDC, 2005). Alcohol use during pregnancy is the leading preventable cause of intellectual disabilities in children in the United States (Maier & West, 2001). 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 drinks on a single occasion) or 7 or more drinks during a single week place a child at risk.

In extreme cases, alcohol consumption during pregnancy can lead to fetal death, but also can result **in Fetal Alcohol Spectrum Disorders (FASD),** *which is an umbrella term for the range of effects that can occur due to alcohol consumption during pregnancy* (March of Dimes, 2016a). The most severe form of FASD is Fetal Alcohol Syndrome (FAS). Children with FAS share certain physical features such as flattened noses, small eye holes, and small heads (see Figure 2.10). Cognitively, these children have poor judgment, poor impulse control, higher rates of ADHD, learning issues, and lower IQ scores. These developmental problems and delays persist into adulthood (Streissguth, Barr, Kogan, & Bookstein, 1996) and can include criminal behavior, psychiatric problems, and unemployment (CDC, 2016a). Based on animal studies, it has been hypothesized that a mother's alcohol consumption during pregnancy may predispose her child to like alcohol (Youngentob, Molina, Spear, & Youngentob, 2007).



Fetal Alcohol Spectrum Disorder Facial Features

Facial Feature	Potential Effect of Fetal Alcohol
Head size	Below-average head circumference
Eyes	Smaller than average eye opening, skin folds at corners of eyes
Nose	Low nasal bridge, short nose
Midface	Smaller than average midface size
Lip and philtrum	Thin upper lip, indistinct philtrum

Source

Figure 2.10: Fetal Alcohol Spectrum Disorders.

Tobacco: Another widely used teratogen is tobacco. According to Tong et al. (2013) in conjunction with the Centers for Disease

Control and Prevention, data from 27 sites in 2010 representing 52% of live births, showed that among women with recent live births:

- About 23% reported smoking in the 3 months prior to pregnancy.
- Almost 11% reported smoking during pregnancy.
- More than half (54.3%) reported that they quit smoking by the last 3 months of pregnancy.
- Almost 16% reported smoking after delivery.

When comparing the ages of women who smoked:

- Women <20, 13.6% smoked during pregnancy
- Women 20–24,17.6% smoked during pregnancy
- Women 25–34, 8.8% smoked during pregnancy
- Women ≥35, 5.7% smoked during pregnancy

The findings among racial and ethnic groups indicated that smoking during pregnancy was highest among American Indians/Alaska Natives (26.0%) and lowest among Asians/Pacific Islanders (2.1%).

When a pregnant woman smokes the fetus is exposed to dangerous chemicals including nicotine, carbon monoxide and tar, which lessen the amount of oxygen available to the fetus. Oxygen is important for overall growth and development. Tobacco use during pregnancy has been associated with low birth weight, **ecotopic pregnancy** (*fertilized egg implants itself outside of the uterus*), **placenta previa** (*placenta lies low in the uterus and covers all or part of the cervix*), **placenta abruption** (*placenta separates prematurely from the uterine wall*), preterm delivery, stillbirth, fetal growth restriction, sudden infant death syndrome (SIDS), birth defects, learning disabilities, and early puberty in girls (Center for Disease Control, 2015d). A woman being exposed to second-hand smoke during pregnancy has also been linked to low-birth weight infants.

Prescription/Over-the-counter Drugs: About 70% of pregnant

women take at least one prescription drug (March of Dimes, 2016e). A woman should not be taking any prescription drug during pregnancy unless it was prescribed by a health care provider who knows she is pregnant. Some prescription drugs can cause birth defects, problems in overall health, and development of the fetus. Over-the-counter drugs are also a concern during the prenatal period because they may cause certain health problems. For example, the pain reliever ibuprofen can cause serious blood flow problems to the fetus during the last three months.



Figure 2.11. Prescription/Over-the-counter Drugs are not recommended during pregnancy.

Illicit Drugs: Common illicit drugs include cocaine, ecstasy and other club drugs, heroin, marijuana, and prescription drugs that are abused. 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 and have other unhealthy behaviors. These include smoking, drinking alcohol, not eating healthy meals, and being more likely to get a sexually transmitted disease. 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 problems in brain development (March of Dimes, 2016c). *If a baby's mother used an*

addictive drug during pregnancy that baby can get addicted to the drug before birth and go through drug withdrawal after birth, also known as **Neonatal Abstinence Syndrome** (March of Dimes, 2015d). Other complications of illicit drug use include premature birth, smaller than normal head size, birth defects, heart defects, and infections. Additionally, babies born to mothers who use drugs may have problems later in life, including learning and behavior difficulties, slower than normal growth, and die from Sudden Infant Death Syndrome. Children of substance abusing parents are also considered at high risk for a range of biological, developmental, academic, and behavioral problems, including developing substance abuse problems of their own (Conners, et al., 2003).

Box 2.3: Should Women Who Use Drugs During Pregnancy Be Arrested and Jailed?

Women who use drugs or alcohol during pregnancy can cause serious lifelong harm to their child. Some people have advocated mandatory screenings for women who are pregnant and have a history of drug abuse, and if the women continue using, to arrest, prosecute, and incarcerate them (Figdor & Kaeser, 1998). This policy was tried in Charleston, South Carolina 20 years ago. The policy was called the Interagency Policy on Management of Substance Abuse During Pregnancy and had disastrous results.

The Interagency Policy applied to patients attending the obstetrics clinic at MUSC, which primarily serves patients who are indigent or on Medicaid. It did not apply to private obstetrical patients. The policy required patient education about the harmful effects of substance abuse during pregnancy. A statement also warned patients that protection of unborn and newborn children from the harms of illegal drug abuse could involve the Charleston police, the Solicitor of the Ninth Judicial Court, and the Protective Services Division of the Department of Social Services (DSS). (Jos, Marshall, & Perlmutter, 1995, pp. 120–121)

This policy seemed to deter women from seeking prenatal care, deterred them from seeking other social services, and was applied solely to low-income women, resulting in lawsuits. The program was canceled after 5 years, during which 42 women were arrested. A federal agency later determined that the program involved human experimentation without the approval and oversight of an institutional review board (IRB).

In July 2014, Tennessee enacted a law that allows women who illegally use a narcotic drug while pregnant to be prosecuted for assault if her infant is harmed or addicted to the drug (National Public Radio, 2015). According to the National Public Radio report, a baby is born dependent on a drug every 30 minutes in Tennessee, which is a rate three times higher than the national average. However, since the law took effect the number of babies born having drug withdrawal symptoms has not diminished. Critics contend that the criminal justice system should not be involved in what is considered a healthcare problem. What do you think? Is the issue of mothers using illicit drugs more of a legal or medical concern?

Pollutants: There are more than 83,000 chemicals used in the United States with little information on the effects of them during pregnancy (March of Dimes, 2016b). An environmental pollutant of significant concern is lead poisoning, which is connected with low birth weight and slowed neurological development. The chemicals in certain pesticides are also potentially damaging and may lead to birth defects, learning problems, low birth weight, miscarriage, and premature birth (March of Dimes, 2014). Prenatal exposure to

bisphenol A (BPA), a chemical commonly used in plastics and food and beverage containers, may disrupt the action of certain genes contributing to certain birth defects (March of Dimes, 2016b). Radiation is another environmental hazard. If a mother is exposed to radiation, it can get into the bloodstream and pass through the umbilical cord to the baby. Radiation can also build up in body areas close to the uterus, such as the bladder. Exposure to radiation can slow the baby's growth, cause birth defects, affect brain development, cause cancer, and result in a miscarriage. Mercury, a heavy metal, can cause brain damage and affect the baby's hearing and vision. This is why women are cautioned about the amount and type of fish they consume during pregnancy.



Figure 2.12: Toxoplasmosis could be infected by touching cat feces, soil or sand.

Toxoplasmosis: The tiny parasite, *Toxoplasma gondii*, causes an infection called **Toxoplasmosis**. According to the March of Dimes (2012d), *Toxoplasma gondii* infects more than 60 million people in the United States. A healthy immune system can keep the parasite at bay producing no symptoms, so most people do not know they are infected. As routine prenatal screening frequently does not test for the presence of this parasite, pregnant women may want to talk to their health-care provider about being tested. Toxoplasmosis can cause premature birth, stillbirth, and can result in birth defects to the eyes and brain. While most babies born with this infection show no symptoms, ten percent may experience eye infections,

enlarged liver and spleen, jaundice, and pneumonia. To avoid being infected, women should avoid eating undercooked or raw meat and unwashed fruits and vegetables, touching cooking utensils that touched raw meat or unwashed fruits and vegetables, and touching cat feces, soil or sand. If women think they may have been infected during pregnancy, they should have their baby tested.

Sexually Transmitted Diseases: 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 to their unborn child. Additionally, the earlier the treatment begins, the better the health outcomes for mother and baby (CDC, 2016d). Sexually transmitted diseases (STDs) can cause premature birth, premature rupture of the amniotic sac, an ectopic pregnancy, birth defects, miscarriage, and still births (March of Dimes, 2013). Most babies become infected with STDS while passing through the birth canal during delivery, but some STDs can cross the placenta and infect the developing fetus.

Human Immunodeficiency Virus (HIV): One of the most potentially devastating teratogens is HIV. HIV and Acquired Immune Deficiency Syndrome (AIDS) are leading causes of illness and death in the United States (Health Resources and Services Administration, 2015). One of the main ways children under age 13 become infected with HIV is via mother-to-child transmission of the virus prenatally, during labor, or by breastfeeding (CDC, 2016c). There are some measures that can be taken to lower the chance the child will contract the disease. HIV positive mothers who take antiviral medications during their pregnancy greatly reduce the chance of passing the virus to the fetus. The risk of transmission is less than 2 percent; in contrast, it is 25 percent if the mother does not take antiretroviral drugs (CDC, 2016b). However, the long-term risks of prenatal exposure to the medication are not known. It is recommended that women with HIV deliver the child by c-section, and that after birth they avoid breast feeding.

German measles (or rubella): Rubella, also called German

measles, is an infection that causes mild flu-like symptoms and a rash on the skin. However, only have of children infected have these symptoms, while others have no symptoms (March of Dimes, 2012a). Rubella has been associated with a number of birth defects. 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 11^{th} week of prenatal development and can also cause brain damage. Women in the United States are much less likely to be afflicted with rubella, because most women received childhood vaccinations that protect her from the disease.

2.8: Maternal Factors

Mothers over 35: Most women over 35 who become pregnant are in good health and have healthy pregnancies. However, according to the March of Dimes (2016d), women over age 35 are more likely to have an increased risk of:

- Fertility problems
- High blood pressure
- Diabetes
- Miscarriages
- Placenta Previa
- Cesarean section
- Premature birth
- Stillbirth
- A baby with a genetic disorder or other birth defects

Because a woman is born with all her eggs, environmental teratogens can affect the quality of the eggs as women get older. Also, a woman's reproductive system ages which can adversely affect the pregnancy. Some women over 35 choose special prenatal screening tests, such as a maternal blood screening, to determine if there are any health risks for the baby.



Figure 2.13: Getting pregnant later in life.

Although there are medical concerns associated with having a child later in life, there are also many positive consequences to being a more mature parent. Older parents are more confident, less stressed, and typically married providing family stability. Their children perform better on math and reading tests, and they are less prone to injuries or emotional troubles (Albert, 2013). Women who choose to wait are often well educated and lead healthy lives. According to Gregory (2007), older women are more stable, demonstrate a stronger family focus, possess greater self-confidence, and have more money.

Having a child later in one's career equals overall higher wages. In fact, for every year a woman delays motherhood, she makes 9% more in lifetime earnings. Lastly, women who delay having children actually live longer. Sun et al. (2015) found that women who had their last child after the age of 33 doubled their chances of living to age 95 or older than women who had their last child before their 30th birthday. A woman's natural ability to have a child at a later age indicates that her reproductive system is aging slowly, and consequently so is the rest of her body.

Teenage Pregnancy: A teenage mother is at a greater risk for having pregnancy complications including anemia, and high blood

pressure. These risks are even greater for those under age 15. Infants born to teenage mothers have a higher risk for being premature and having low birthweight or other serious health problems. Premature and low birthweight babies may have organs that are not fully developed which can result in breathing problems, bleeding in the brain, vision loss, and serious intestinal problems. Very low birthweight babies (less than 3 1/3 pounds) are more than 100 times as likely to die, and moderately low birthweight babies (between 3 1/3 and 5 1/2 pounds) are more than 5 times as likely to die in their first year, than normal weight babies (March of Dimes, 2012c). Again, the risk is highest for babies of mothers under age 15. Reasons for these health issues include that teenagers are the least likely of all age groups to get early and regular prenatal care. Additionally, they may engage in negative behaviors including eating unhealthy food, smoking, drinking alcohol, and taking drugs. Additional concerns for teenagers are repeat births. About 25% of teen mothers under age 18 have a second baby within 2 years after the first baby's birth.

Gestational Diabetes: Seven percent of pregnant women develop **gestational diabetes** (March of Dimes, 2015b). *Diabetes is a condition where the body has too much glucose in the bloodstream.* Most pregnant women have their glucose level tested at 24 to 28 weeks of pregnancy. Gestational diabetes usually goes away after the mother gives birth, but it might indicate a risk for developing diabetes later in life. If untreated, gestational diabetes can cause premature birth, stillbirth, the baby having breathing problems at birth, jaundice, or low blood sugar. Babies born to mothers with gestational diabetes can also be considerably heavier (more than 9 pounds) making the labor and birth process more difficult. For expectant mothers, untreated gestational diabetes can cause preeclampsia (high blood pressure and signs that the liver and kidneys may not be working properly) discussed later in the chapter. Risk factors for gestational diabetes include age (being over age 25), being overweight or gaining too much weight during pregnancy, family history of diabetes, having had gestational diabetes with a prior pregnancy,

and race and ethnicity (African-American, Native American, Hispanic, Asian, or Pacific Islander have a higher risk). Eating healthy and maintaining a healthy weight during pregnancy can reduce the chance of gestational diabetes. Women who already have diabetes and become pregnant need to attend all their prenatal care visits, and follow the same advice as those for women with gestational diabetes as the risk of preeclampsia, premature birth, birth defects, and stillbirth are the same.

High Blood Pressure (Hypertension): Hypertension *is a condition in which the pressure against the wall of the arteries becomes too high.* There are two types of high blood pressure during pregnancy, gestational and chronic. Gestational hypertension only occurs during pregnancy and goes away after birth. Chronic high blood pressure refers to women who already had hypertension before the pregnancy or to those who developed it during pregnancy and it did not go away after birth. According to the March of Dimes (2015c) about 8 in every 100 pregnant women have high blood pressure. High blood pressure during pregnancy can cause premature birth and low birth weight (under five and a half pounds), placental abruption, and mothers can develop preeclampsia.

Rh Disease: Rh is a protein found in the blood. Most people are Rh positive, meaning they have this protein. Some people are Rh negative, meaning this protein is absent. Mothers who are Rh negative are at risk of having a baby with *a form of anemia* called **Rh disease** (March of Dimes, 2009). A father who is Rh-positive and mother who is Rh-negative can conceive a baby who is Rh-positive. Some of the fetus's blood cells may get into the mother's bloodstream and her immune system is unable to recognize the Rh factor. The immune system starts to produce antibodies to fight off what it thinks is a foreign invader. Once her body produces immunity, the antibodies can cross the placenta and start to destroy the red blood cells of the developing fetus. As this process takes time, often the first Rh positive baby is not harmed, but as the mother's body will continue to produce antibodies to the Rh factor across her lifetime, subsequent pregnancies can pose greater risk

for an Rh positive baby. In the newborn, Rh disease can lead to jaundice, anemia, heart failure, brain damage and death.

Weight Gain during Pregnancy: According to March of Dimes (2016f) during pregnancy most women need only an additional 300 calories per day to aid in the growth of the fetus. Gaining too little or too much weight during pregnancy can be harmful. Women who gain too little may have a baby who is low-birth weight, while those who gain too much are likely to have a premature or large baby. There is also a greater risk for the mother developing preeclampsia and diabetes, which can cause further problems during the pregnancy. Table 2.4 shows the healthy weight gain during pregnancy. Putting on the weight slowly is best. Mothers who are concerned about their weight gain should talk to their health care provider.

Mo

If you were a healthy weight before pregnancy	If you were underweight
Gain 25 – 35 lbs 1-4.5 lbs in the first trimester and 1 lb per week in the second and third trimesters	Gain 28 – 4 1-4.5 lbs in the first trimester ar per week in the second and thir

Stress: Feeling stressed is common during pregnancy, but high

levels of stress can cause complications including having a premature baby or a low-birthweight baby. Babies born early or too small are at an increased risk for health problems. Stress-related hormones may cause these complications by affecting a woman's immune systems resulting in an infection and premature birth. Additionally, some women deal with stress by smoking, drinking alcohol, or taking drugs, which can lead to problems in the pregnancy. High levels of stress in pregnancy have also been correlated with problems in the baby's brain development and immune system functioning, as well as childhood problems such as trouble paying attention and being afraid (March of Dimes, 2012b).

Depression: Depression is a significant medical condition in which feelings of sadness, worthlessness, guilt, and fatigue interfere with one's daily functioning. Depression can occur before, during, or after pregnancy, and 1 in 7 women is treated for depression sometime between the year before pregnancy and year after pregnancy (March of Dimes, 2015a). Women who have experienced depression previously are more likely to have depression during pregnancy. Consequences of depression include the baby being born premature, having a low birthweight, being more irritable, less active, less attentive, and having fewer facial expressions. About 13% of pregnant women take an antidepressant during pregnancy. It is important that women taking antidepressants during pregnancy discuss the medication with a health care provider as some medications can cause harm to the developing organism. In fact, birth defects happen about 2 to 3 times more often in women who take certain Selective Serotonin Reuptake Inhibitors (SSRIs). Depression is not the same as the Baby Blues. The baby Blues are feelings of sadness that occur 3 to 5 days after having a baby, and typically disappear usually within 10 days of the birth. New mothers may have trouble sleeping, be moody, and feel let-down from the birthing experience. According to the Diagnostic and Statistical Manual of Mental Disorders-5th edition (DSM-V), (American Psychiatric Association, 2013), peripartum onset of depression, also known as Postpartum Depression, is a type of depression that

occurs during pregnancy or in the 4 weeks following pregnancy. Approximately 1 out of 8 women experience postpartum depression. Changing hormone levels are thought to be a factor in its occurrence, however, risk factors include having depression previously, a family history of depression, being younger than 20, experiencing stress, and substance use.

Peripartum-onset mood disorders, both depression and mania, can present with or without psychotic features. Hallucinations and delusions are associated with postpartum psychotic episodes, and have included command hallucinations to kill the infant or delusions that the infant is possessed. Psychotic features occur in approximately 1 in 500 to 1 in 1,000 deliveries, and the risk is higher for women with prior postpartum mood episodes (American Psychiatric Association, 2013).

Paternal Impact: The age of fathers at the time of conception is also an important factor in health risks for children. According to Nippoldt (2015) offspring of men over 40 face an increased risk of miscarriages, autism, birth defects, achondroplasia (bone growth disorder) and schizophrenia. These increased health risks are thought to be due to accumulated chromosomal aberrations and mutations during the maturation of sperm cells in older men (Bray, Gunnell, & Smith, 2006). However, like older women, the overall risks are small.



Figure 2.14: Hazardous Occupations.

In addition, men are more likely than women to work in occupations where hazardous chemicals, many of which have teratogenic effects or may cause genetic mutations, are used (Cordier, 2008). These may include petrochemicals, lead, and pesticides that can cause abnormal sperm and lead to miscarriages or diseases. Men are also more likely to be a source of second hand smoke for their developing offspring. As noted earlier, smoking by either the mother or around the mother can hinder prenatal development.

2.9: Prenatal Assessment

A number of assessments are suggested to women as part of their routine prenatal care to find conditions that may increase the risk of complications for the mother and fetus (Eisenberg, Murkoff, & Hathaway, 1996). These can include blood and urine analyses and screening and diagnostic tests for birth defects.

Ultrasound is one of the main screening tests done in combination with blood tests. The ultrasound *is a test in which sound waves are used to examine the fetus*. There are two general types. *Transvaginal ultrasounds* are used early pregnancy, while *transabdominal ultrasounds* are more common and used after 10 weeks of pregnancy (typically, 16 to 20 weeks). Ultrasounds are used to check the fetus for defects or problems. It can also find out the age of the fetus, location of the placenta, fetal position, movement, breathing and heart rate, amount of amniotic fluid in the uterus, and number of fetuses. Most women have at least one ultra sound during pregnancy, but if problems are noted, additional ultrasounds may be recommended.



Figure 2.15: Preparing for an Ultrasound.

When diagnosis of a birth defect is necessary, ultrasounds help guide the more invasive diagnostic tests of amniocentesis and chorionic villus sampling. **Amniocentesis** *is a procedure in which a needle is used to withdraw a small amount of amniotic fluid and cells from the sac surrounding the fetus and later tested.* **Chorionic Villus Sampling** *is a procedure in which a small sample of cells is taken from the placenta and tested.* Both amniocentesis and chorionic villus sampling have a risk of miscarriage, and consequently they are not done routinely.

Box 2.4: Infertility and Reproductive Technology

Infertility: Infertility affects about 10 to 15 percent of couples in the United States (Mayo Clinic, 2015). Male factors create 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 in women is **Pelvic Inflammatory Disease (PID)**, *which is an infection of a woman's reproductive organs* (Carroll, 2007). It is a complication often caused by some STDs, such as chlamydia and gonorrhea. Other infections that are not sexually transmitted can also cause PID. Based on a nationally representative sample from 2006-2010, 5.0% of U.S. women have reported being treated for PID in their lifetime, and 1 out of 8 women with a history of PID experience difficulties getting pregnant (CDC, 2014). Both male and female factors contribute to the remainder of cases of infertility.

Fertility treatment: The majority of infertility cases 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 (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 costs of IVF are between $12,000-$17,000 (U. S. National Library of Medicine, 2014). The success rate varies depending on the age of the mother and type of egg implanted, such as whether the egg was recently removed from the woman, used after being frozen, or donated from another woman. According to a 2006 CDC report on assisted reproductive technologies that led to a healthy baby, the percentages were as follows:

- 40.9% in women aged 25
- 39.5% in women aged 30
- 33.4% in women aged 35
- 15.4% in women aged 40

Higher success rates, but 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* (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 fifteen states, but the amount and type of coverage available varies greatly (American Society of Reproductive Medicine, 2015). 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.

2.10: 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 not 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).

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.

Preeclampsia, also known as Toxemia, *is characterized by a sharp rise in blood pressure, a leakage of protein into the urine as a result of kidney problems, and swelling of the hands, feet, and face during the third trimester of pregnancy*. Preeclampsia is the most common complication of pregnancy. It is estimated to affect 5% to 10% of all pregnancies globally and accounts for 40% to 60% of maternal deaths in developing countries (National Institute of Child Health and Human Development, 2013). Rates are lower in the United States and preeclampsia affects about 3% to 5% of pregnant women. Preeclampsia occurs most frequently in first pregnancies, and it is more common in women who are obese, have diabetes, or are

carrying twins. *When preeclampsia causes seizures, the condition is known as* **eclampsia**, which is the second leading cause of maternal death in the United States. Preeclampsia is also a leading cause of fetal complications, which include low birth weight, premature birth, and stillbirth. Treatment is typically bed rest and sometimes medication. If this treatment is ineffective, labor may be induced.

Maternal Mortality: Approximately 1000 women die in childbirth around the world each day (World Health Organization, 2010). Rates are highest in Subsaharan 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.

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

2.11: Birth

Learning Objectives: Birth

- Describe how expectant parents prepare for childbirth
- Describe the stages of vaginal delivery
- Explain why a Caesarean or induced birth is necessary
- Describe the two common procedures to assess the condition of the newborn
- Describe problems newborns experience before, during, and after birth

Preparation for Childbirth

Prepared childbirth refers to being not only in good physical condition to help provide a healthy environment for the baby to develop, but also helping individuals to prepare to accept their new roles as parents. Additionally, parents can receive information and training that will assist them for delivery and life with the baby. The more future parents can learn about childbirth and the newborn, the better prepared they will be for the adjustment they must make to a new life.

One of the most common methods for preparing for childbirth is **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 though 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 (Eisenberg, Murkoff, & Hathaway, 1996).

Choosing Where to Have the Baby and Who Will Deliver: The

vast majority of births occur in a hospital setting. However, one percent of women choose to deliver at home (Martin, Hamilton, Osterman, Curtin, & Mathews, 2015). Women who are at low risk for birth complications can successfully deliver at home. More than half (67%) of home deliveries are by certified nurse midwifes. Midwives are trained and licensed to assist in delivery and are far less expensive than the cost of a hospital delivery. However, because of the potential for a complication during the birth process, most medical professionals recommend that delivery take place in a hospital. Despite the concerns, in the United States women who have had previous children, who are over 25, and who are white are more likely to have out-of-hospital births (MacDorman, Menacker, & Declercq, 2010). In addition to home births, one-third of out-of- hospital births occur in freestanding clinics, birthing centers, in physician's offices, or other locations.

Stages of Birth for Vaginal Delivery

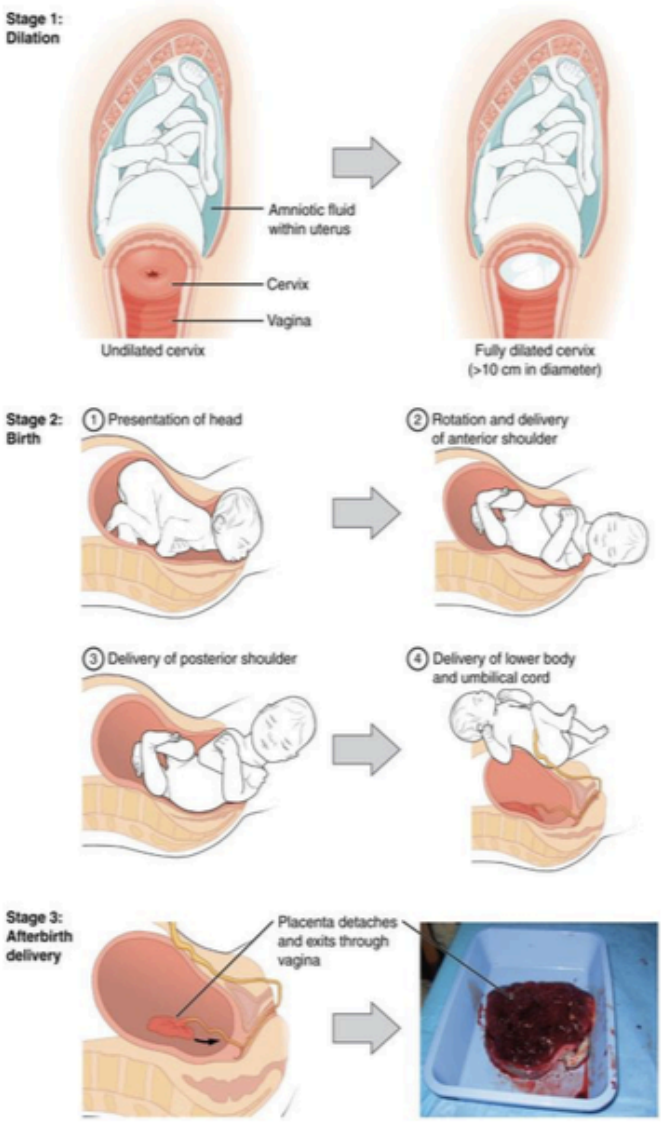


Figure 2.16: Stages of Birth for a Vaginal Delivery.

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 on its own 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 (See Figure 2.16). This may take around 12-16 hours for first children or about 6-9 hours for women who have previously given birth. Labor may also begin with a discharge of blood or amniotic fluid.

The Second Stage involves the passage of the baby through the birth canal. This stage takes about 10-40 minutes. Contractions usually come about every 2-3 minutes. The mother pushes and relaxes as directed by the medical staff. Normally the head is delivered first. The baby is then rotated so that one shoulder can come through and then the other shoulder. The rest of the baby quickly passes through. At this stage, an **episiotomy** *or incision made in the tissue between the vaginal opening and anus*, may be performed to avoid tearing the tissue of the back of the vaginal opening (Mayo Clinic, 2016). The baby's mouth and nose are suctioned out. The umbilical cord is clamped and cut.

The Third Stage is relatively painless. During this stage, the placenta or afterbirth is delivered. This is typically within 20 minutes after delivery. If an episiotomy was performed it is stitched up during this stage.

More than 50% of women giving birth at hospitals use an epidural

anesthesia during delivery (American Pregnancy Association, 2015). An **epidural block** *is a regional analgesic that can be used during labor and alleviates most pain in the lower body without slowing labor.* The epidural block can be used throughout labor and has little to no effect on the baby. Medication is injected into a small space outside the spinal cord in the lower back. It takes 10 to 20 minutes for the medication to take effect. An epidural block with stronger medications, such as anesthetics, can be used shortly before a C-section or if a vaginal birth requires the use of forceps or vacuum extraction. A **Cesarean Section (C-section)** *is surgery to deliver the baby by being removed through the mother's abdomen.* In the United States, about one in three women have their babies delivered this way (Martin et al., 2015). Most C-sections are done when problems occur during delivery unexpectedly. These can include:

- Health problems in the mother
- Signs of distress in the baby
- Not enough room for the baby to go through the vagina
- The position of the baby, such as a breech presentation where the head is not in the downward position.

C-sections are also more common among women carrying more than one baby. Although the surgery is relatively safe for mother and baby, it is considered major surgery and carries health risks. Additionally, it also takes longer to recover from a C-section than from vaginal birth. After healing, the incision may leave a weak spot in the wall of the uterus. This could cause problems with an attempted vaginal birth later. However, more than half of women who have a C-section can give vaginal birth later.

An **Induced Birth**: Sometimes a baby's arrival may need to be **Induced** *or delivered before labor begins*. Inducing labor may be recommended for a variety of reasons when there is concern for the health of the mother or baby. For example:

- The mother is approaching two weeks beyond her due date

and labor has not started naturally
- The mother's water has broken, but contractions have not begun
- There is an infection in the mother's uterus
- The baby has stopped growing at the expected pace
- There is not enough amniotic fluid surrounding the baby
- The placenta peels away, either partially or completely, from the inner wall of the uterus before delivery
- The mother has a medical condition that might put her or her baby at risk, such as high blood pressure or diabetes (Mayo Clinic, 2014).

2.12: Assessing the Neonate

The Apgar assessment 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: Heart rate, respiration, muscle tone (assessed 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.

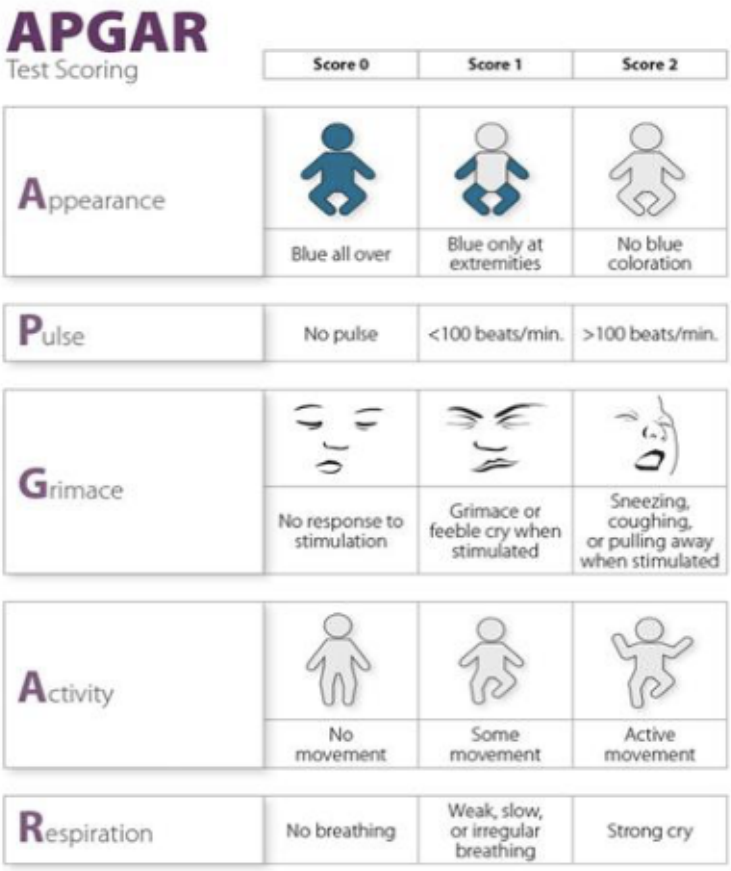


Figure 2.17: APGAR Test Scores.

Another way to assess the condition of the newborn is the Neonatal Behavioral Assessment Scale (NBAS). The baby's motor development, muscle tone, and stress response are assessed. This tool has been used around the world to further assess the newborn, especially those with low Apgar scores, and to make comparisons of infants in different cultures (Brazelton & Nugent, 1995).



Figure 2.18: Newborn in the neonatal unit.

Problems of the Newborn

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.

Low Birth weight: We have been discussing a number of teratogens associated with low birth weight such as alcohol, tobacco, etc. A child is considered **low birth weight** *if he or she weighs less than 5 pounds 8 ounces (2500 grams).* About 8.2 percent of babies born in the United States are of low birth weight (Center for Disease Control, 2015a). 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.

Preterm: A newborn might also have a low birth weight if it is *born at less than 37 weeks gestation*, which qualifies it as a **preterm** baby (CDC, 2015c). Early birth can be triggered by anything that disrupts the mother's system. For instance, vaginal infections can 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. A significant consequence of preterm birth includes **respiratory distress syndrome**, *which is characterized by weak and irregular breathing* (United States National Library of Medicine, 2015).

Small-for-Date Infants: *Infants that have birth weights that are below expectation based on their gestational age are referred to as* **small-for-date.** These infants may be full term or preterm, but still weigh less than 90 % of all babies of the same gestational age. This is a very serious situation for newborns as their growth was adversely affected. Regev et al. (2003) found that small-for-date infants died at rates more than four times higher than other infants.

2.13: Canadian Resources

Below are resources that provide the Canadian context related to heredity, birth, and prenatal development.

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- Statistics Canada. (2017). *Preconception health* [Infographic]. https://www.canada.ca/en/public-health/services/publications/healthy-living/preconception-health-infographic.html

2.14: Test your knowledge



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3: INFANCY AND TODDLERHOOD

Learning Objectives: Physical Development in Infancy and Toddlerhood

- Summarze overall physical growth during infancy
- Describe the growth of the brain during infancy
- Explain infant sleep
- Identify newborn reflexes
- Compare gross and fine motor skills
- Contrast development of the senses in newborns
- Describe the habituation procedure
- Explain the merits of breastfeeding and when to introduce more solid foods
- Discuss the nutritional concerns of marasmus and kwashiorkor

We will now turn our attention to the physical, cognitive, and socioemotional development during the first two years. Researchers have given this part of the lifespan more attention than any other period, perhaps because changes during this time are so dramatic and so noticeable. We have also 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 (Bruer, 1999).

3.1: Physical Development in Infancy and Toddlerhood

Overall Physical Growth: The average newborn in the United States weighs about 7.5 pounds (between 5 and 10 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, but can be cause for concern for those who have a smaller infant. This weight loss is temporary, however, and is followed by a rapid period of growth. By the time an infant is 4 months old, it usually doubles in weight and by one year has tripled the birth weight. By age 2, the weight has quadrupled, so we can expect that a 2 year-old should weigh between 20 and 40 pounds. The average length at one year is about 29.5 inches and at two years it is around 34.4 inches (Bloem, 2007).

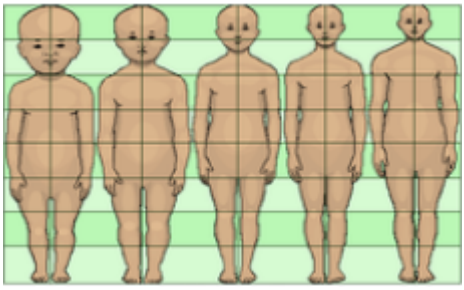


Figure 3.1: Changes in Proportions.

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, and by age 25 it comprises about 20 percent our length.

The Brain in the First Two Years

Some of the most dramatic physical change that occurs during this period is in the brain. We are born with most of the brain cells that we will ever have; that is, about 85 billion neurons whose function is to store and transmit information (Huttenlocher & Dabholkar, 1997). While most of the brain's neurons are present at birth, they are not fully mature. During the next several years **Dendrites**, *or branching extensions that collect information from other neurons*, will undergo a period of exuberance. Because of this proliferation of dendrites, by age two a single neuron might have thousands of dendrites. **Synaptogenesis**, *or the formation of connections between neurons*, continues from the prenatal period forming thousands of new connections during infancy and toddlerhood. *This period of rapid neural growth is referred to as* **Synaptic Blooming**.

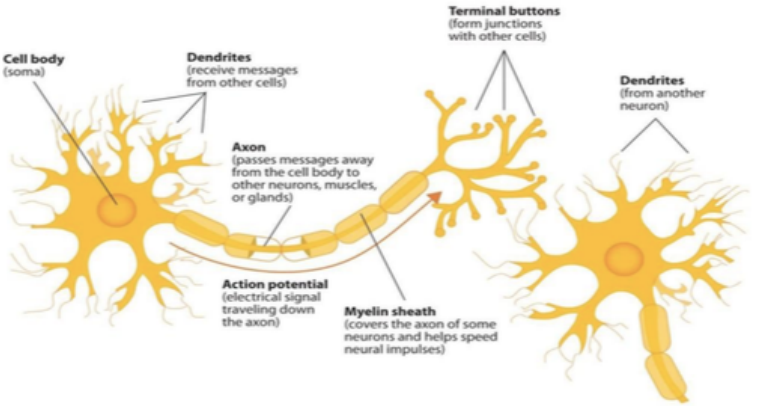


Figure 3.2: Components of the Neuron.

The blooming period of neural growth is then followed by a period of **Synaptic Pruning**, *where neural connections are reduced thereby making those that are used much stronger*. It is thought that pruning causes the brain to function more efficiently, allowing for mastery of more complex skills (Kolb & Whishaw, 2011). Experience will shape

which of these connections are maintained and which of these are lost. Ultimately, about 40 percent of these connections will be lost (Webb, Monk, and Nelson, 2001). Blooming occurs during the first few years of life, and pruning continues through childhood and into adolescence in various areas of the brain.

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* (Carlson, 2014). 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.

At birth the brain is about 25 percent its adult weight and by age two it is at 75 percent its adult weight. Most of the neural activity is occurring in the **Cortex** *or the thin outer covering of the brain involved in voluntary activity and thinking.* The cortex is divided into two hemispheres, and each hemisphere is divided into four lobes, each separated by folds known as fissures. If we look at the cortex starting at the front of the brain and moving over the top (see Figure 3.3), we see first the **frontal lobe** (behind the forehead), *which is responsible primarily for thinking, planning, memory, and judgment.* Following the frontal lobe is the **parietal lobe**, *which extends from the middle to the back of the skull and which is responsible primarily for processing information about touch.* Next is the **occipital lobe**, *at the very back of the skull, which processes visual information.* Finally, in front of the occipital lobe, between the ears, is the **temporal lobe**, which is *responsible for hearing and language.*

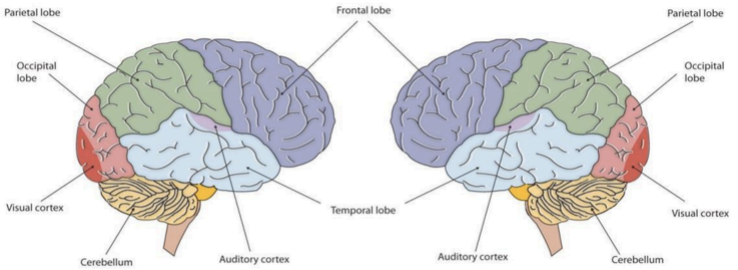


Figure 3.3: The two hemispheres. The brain is divided into two hemispheres (left and right), each of which has four lobes (temporal, frontal, occipital, and parietal). Furthermore, there are specific cortical areas that control different processes.

Although the brain grows rapidly during infancy, specific brain regions do not mature at the same rate. Primary motor areas develop earlier than primary sensory areas, and the prefrontal cortex, that is located behind the forehead, is the least developed. As the prefrontal cortex matures, the child is increasingly able to regulate or control emotions, to plan activities, strategize, and have better judgment. This is not fully accomplished in infancy and toddlerhood, but continues throughout childhood, adolescence and into adulthood.

Lateralization *is the process in which different functions become localized primarily on one side of the brain.* For example, in most adults the left hemisphere is more active than the right during language production, while the reverse pattern is observed during tasks involving visuospatial abilities (Springer & Deutsch, 1993). This process develops over time, however, structural asymmetries between the hemispheres have been reported even in fetuses (Chi, Dooling, & Gilles, 1997; Kasprian et al., 2011) and infants (Dubois et al., 2009). Lastly, **Neuroplasticity** *refers to the brain's ability to change, both physically and chemically, to enhance its adaptability to environmental change and compensate for injury.* Both environmental experiences, such as stimulation, and events within a person's body, such as hormones and genes, affect the brain's

plasticity. So too does age. Adult brains demonstrate neuroplasticity, but they are influenced more slowly and less extensively than those of children (Kolb & Whishaw, 2011).

3.2: Infant Sleep

A newborn typically sleeps approximately 16.5 hours per 24-hour period. This is usually polyphasic sleep in that the infant is accumulating the 16.5 hours over several sleep periods throughout the day (Salkind, 2005). The infant is averaging 15 hours per 24-hour period by one month, and 14 hours by 6 months. By the time children turn two, they are averaging closer to 10 hours per 24 hours. Additionally, the average newborn will spend close to 50% of the sleep time in the Rapid Eye Movement (REM) phase, which decreases to 25% to 30% in childhood.



Figure 3.4: A sleeping newborn.

Sudden Unexpected Infant Deaths (SUID): Each year in the United States, there are about 3,500 Sudden Unexpected Infant Deaths (SUID). These deaths occur among infants less than one year-old and have no immediately obvious cause (CDC, 2015). The three commonly reported types of SUID are:

- ***Sudden Infant Death Syndrome* (SIDS): SIDS** *is identified when the death of a healthy infant occurs suddenly and unexpectedly, and medical and forensic investigation findings (including an autopsy) are inconclusive.* SIDS is the leading cause of death in infants 1 to 12 months old, and approximately 1,500 infants died of SIDS in 2013 (CDC, 2015). Because SIDS is diagnosed when no other cause of death can be determined, possible causes of

SIDS are regularly researched. One leading hypothesis suggests that infants who die from SIDS have abnormalities in the area of the brainstem responsible for regulating breathing (Weekes-Shackelford & Shackelford, 2005).

- **Unknown Cause**: The sudden death of an infant less than one year of age that cannot be explained because a thorough investigation was not conducted and cause of death could not be determined.
- **Accidental Suffocation and Strangulation in Bed**: Reasons for accidental suffocation include: Suffocation by soft bedding, another person rolling on top of or against the infant while sleeping, an infant being wedged between two objects such as a mattress and wall, and strangulation such as when an infant's head and neck become caught between crib railings. The percentages of infants who died based on each of the three types are listed in Figure 3.5.

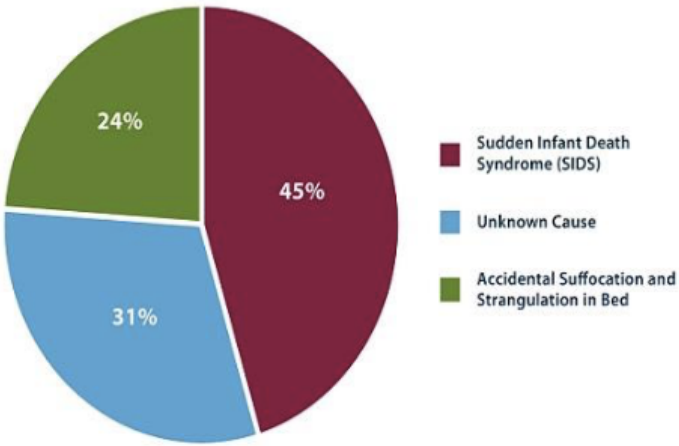


Figure 3.5: Breakdown of Sudden Unexpected Infant Death by Cause, 2013. Source: CDC/NCHS, National Vital Statistics System, Compressed Mortality File.

As can be seen in the below graph (Figure 3.6), the combined SUID death rate declined considerably following the release of the

American Academy of Pediatrics safe sleep recommendations in 1992, which advocated that infants be placed for sleep on their backs (nonprone position). These recommendations were followed by a major Back to Sleep Campaign in 1994. However, accidental suffocation and strangulation in bed mortality rates remained unchanged until the late 1990s. In 1998 death rates from accidental suffocation and strangulation in bed actually started to increase, and they reached the highest rate at 20.8 deaths per 100,000 live births in 2013.

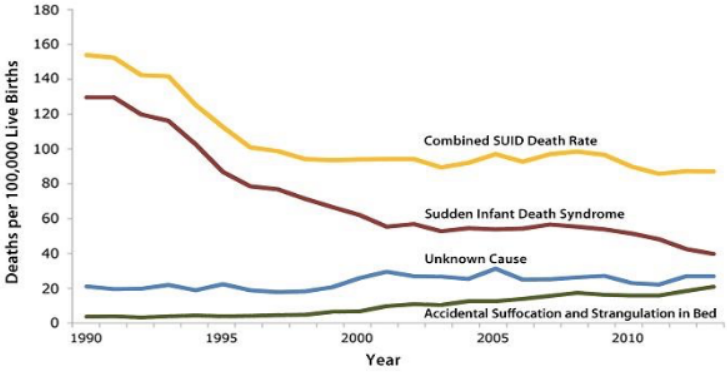


Figure 3.6: Sudden Unexpected Infant Death by Cause, 1990-2013. Source: CDC/NCHS, National Vital Statistics System, Compressed Mortality File.

Should infants be sharing the bed with parents?

Colvin, Collie-Akers, Schunn and Moon (2014) analyzed a total of 8207 deaths from 24 states during 2004–2012 that were contained in the National Center for the Review and Prevention of Child Deaths Case Reporting System, a database of death reports from state child death review teams. The results indicated that younger victims (0-3 months) were more likely to die by bed-sharing and sleeping in an adult bed/on a person. A higher percentage of older victims (4 months to 364 days) rolled into objects in the sleep environment and changed position from side/back to prone. Carpenter et al. (2013) compared infants who died of SIDS with a matched control and found that infants younger than three months old who slept in bed with a parent were five times more likely to die of SIDS compared to babies who slept separately from the parents, but were still in the same room. They concluded that bed sharing, even when the parents do not smoke or take alcohol or drugs, increases the risk of SIDS. However, when combined with parental smoking and maternal alcohol consumption and/or drug use, risks associated with bed sharing greatly increased.



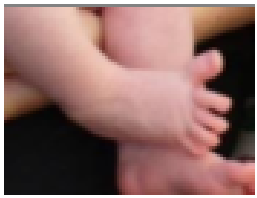
Figure 3.7: A baby sleeping with a parent.

The two studies discussed above were based on American statistics. What about the rest of the world? Co-sleeping occurs in many cultures, primarily because of a more collectivist perspective that encourages a close parent-child bond and interdependent relationship (Morelli, Rogoff, Oppenheim, & Goldsmith, 1992). In countries where co-sleeping is common, however, parents and infants typically sleep on floor mats and other hard surfaces which minimize the suffocation that can occur with bedding and mattresses (Nelson, Schiefenhoevel, & Haimerl, 2000).

3.3: From Reflexes to Voluntary Movements

Newborns are equipped with a number of **reflexes** (Table 3.1) *which are involuntary movements in response to stimulation*. Some of the more common reflexes, such as the sucking reflex and rooting reflex, are important to feeding. The grasping and stepping reflexes are eventually replaced by more voluntary behaviors. Within the first few months of life these reflexes disappear, while other reflexes, such as the eye-blink, swallowing, sneezing, gagging, and withdrawal reflex stay with us as they continue to serve important functions. Reflexes offer pediatricians insight into the maturation and health of the nervous system. Reflexes that persist longer than they should can impede normal development (Berne, 2006). In preterm infants and those with neurological impairments, some of these reflexes may be absent at birth. Once present, they may persist longer than in a neurologically healthy infant (El-Dib, Massaro, Glass & Aly, 2012).

***Table 3.1*: Some Common Infant Reflexes.**

Reflex	Description	Image
Sucking	Suck on anything that touches the lips.	
Rooting	Turning the head when the cheek is touched.	
Grasp	Fingers automatically grip anything that touches the palm of the hand.	
Babinski	The toes will fan out and curl when the sole of the foot is stroked from heel to toe.	
Moro	A sudden noise or loss of support to the head and neck will cause infants to spread out their arms and legs, then quickly contract the limbs inward.	

Reflex	Description	Image
Tonic Neck	When lying on the back with the head to one side, infants will extend the arm and leg on that side while flexing the limbs on the opposite side (looks like a fencer pose).	
Stepping	Legs move in stepping-like motion when feet touch a smooth surface.	

Motor Development

Motor development occurs in an orderly sequence as infants move from reflexive reactions (e.g., sucking and rooting) to more advanced motor functioning. As mentioned during the prenatal section, development occurs according to the **Cephalocaudal** (*from head to tail*) and **Proximodistal** (*from the midline outward*) principles. For instance, babies first learn to hold their heads up, then to sit with assistance, then to sit unassisted, followed later by crawling, pulling up, cruising, and then walking. As motor skills develop, there are certain developmental milestones that young children should achieve. For each milestone there is an average age, as well as a range of ages in which the milestone should be reached. An example of a developmental milestone is a baby holding up its head. Babies on average are able to hold up their head at 6 weeks old, and 90% of babies achieve this between 3 weeks and 4 months old. If a baby is not holding up his head by 4 months old, he is showing a delay. On average, most babies sit alone at 7 months old. Sitting involves both coordination and muscle strength, and 90% of

babies achieve this milestone between 5 and 9 months old. If the child is displaying delays on several milestones, that is reason for concern, and the parent or caregiver should discuss this with the child's pediatrician. Some developmental delays can be identified and addressed through early intervention.

Motor skills *refer to our ability to move our bodies and manipulate objects.* **Fine motor skills** *focus on the muscles in our fingers, toes, and eyes, and enable coordination of small actions* (e.g., grasping a toy, writing with a pencil, and using a spoon). Newborns cannot grasp objects voluntarily but do wave their arms toward objects of interest. At about 4 months of age, the infant is able to reach for an object, first with both arms and within a few weeks, with only one arm. At this age *grasping an object involves the use of the fingers and palm, but no thumbs.* This is known as the **Palmer Grasp**. *The 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.* Now the infant uses a **Pincer Grasp**, and 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.



Figure 3.8: Pincer Grasp.

Gross motor skills *focus on large muscle groups that control our head, torso, arms and legs and involve larger movements* (e.g., balancing, running, and jumping). These skills begin to develop first. Examples include moving to bring the chin up when lying on the stomach, moving the chest up, and rocking back and forth on hands and knees. But it also includes exploring an object with one's feet as many babies do as early as 8 weeks of age if seated in a carrier or other device that frees the hips. This may be easier than reaching for an object with the hands, which requires much more practice (Berk, 2007). 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.

3.4: Sensory Capabilities

Throughout much of history, the newborn was considered a passive, disorganized being who possessed minimal abilities. William James, an early psychologist, had described the newborn's world as "a blooming, buzzing confusion," (Shaffer, 1985). However, current research techniques have demonstrated just how developed the newborn is with especially organized sensory and perceptual abilities.

Vision

The womb is a dark environment void of visual stimulation. Consequently, vision is the most poorly developed sense at birth and time is needed to build those neural pathways between the eye and the brain. Newborns typically cannot see further than 8 to 16 inches away from their faces, and their visual acuity is about 20/400, which means that an infant can see something at 20 feet that an adult with normal vision could see at 400 feet. Thus, the world probably looks blurry to young infants. Because of their poor visual acuity, they look longer at checkerboards with fewer large squares than with many small squares. Infants' thresholds for seeing a visual pattern are higher than adults'. Thus, toys for infants are sometimes manufactured with black and white patterns rather than pastel colors because the higher contrast between black and white makes the pattern more visible to the immature visual system. By about 6 months, infants' visual acuity improves and approximates adult 20/25 acuity.

When viewing a person's face, newborns do not look at the eyes the way adults do; rather, they tend to look at the chin a 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, for patterns over solids, for faces over patterns, and for three-dimensional objects over flat images. Newborns have difficulty distinguishing between colors, but within a few months they are able to discriminate between colors as well as adults. Sensitivity to binocular depth cues, which require inputs from both eyes, is evident by about 3 months and continues to develop during the first 6 months. By 6 months, the infant can perceive depth perception in pictures as well (Sen, Yonas, & Knill, 2001). Infants who have experience crawling and exploring will pay greater attention to visual cues of depth and modify their actions accordingly (Berk, 2007).

Hearing

The infant's sense of hearing is very keen at birth, and the ability to hear is evidenced as soon as the 7th 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. Infants are especially sensitive to the frequencies of sounds in human speech and prefer the exaggeration of infant-directed speech, which will be discussed later. Additionally, infants are innately ready to respond to the sounds of any language, but some of this ability will be lost by 7 or 8 months as the infant becomes familiar with the sounds of a particular language and less sensitive to sounds that are part of an unfamiliar language.



Figure 3.9: An infant wearing headphones.

Newborns also prefer their mother's voices over another female when speaking the same material (DeCasper & Fifer, 1980). Additionally, they will register in utero specific information heard from their mother's voice. DeCasper and Spence (1986) tested 16 infants (average age of 55.8 hours) whose mothers had previously read to them prenatally. The mothers read several passages to their fetuses, including the first 28 paragraphs of the *Cat in the Hat*, beginning when they were 7 months pregnant. The fetuses had been exposed to the stories an average of 67 times or 3.5 hours. When the experimental infants were tested, the target stories (previously heard) were more reinforcing than the novel story as measured by their rate of sucking. However, for control infants, the target stories were not more reinforcing than the novel story indicating that the experimental infants had heard them before.

Touch and Pain

Immediately after birth, a newborn is sensitive to touch and temperature, and is also highly sensitive to pain, responding with crying and cardiovascular responses (Balaban & Reisenauer, 2013). Newborns who are **Circumcised,** *which is the surgical removal of the foreskin of the penis*, without anesthesia experience pain as demonstrated by increased blood pressure, increased heart rate, decreased oxygen in the blood, and a surge of stress hormones

(United States National Library of Medicine, 2016). Research has demonstrated that infants who were circumcised without anesthesia experienced more pain and fear during routine childhood vaccines. Fortunately, many local pain killers are currently used during circumcision.



Figure 3.10: An infant sticking their tongue out.

Taste and Smell

Studies of taste and smell demonstrate that babies respond with different facial expressions, suggesting that certain preferences are innate. Newborns can distinguish between sour, bitter, sweet, and salty flavors and show a preference for sweet flavors. Newborns also prefer the smell of their mothers. An infant only 6 days old is significantly more likely to turn toward its own mother's breast pad than to the breast pad of another baby's mother (Porter, Makin, Davis, & Christensen, 1992), and within hours of birth an infant also shows a preference for the face of its own mother (Bushnell, 2001; Bushnell, Sai, & Mullin, 1989).

Infants seem to be born with the ability to perceive the world in an intermodal way; that is, through stimulation from more than one sensory modality. For example, infants who sucked on a pacifier with either a smooth or textured surface preferred to look at a

corresponding (smooth or textured) visual model of the pacifier. By 4 months, infants can match lip movements with speech sounds and can match other audiovisual events. Although sensory development emphasizes the afferent processes used to take in information from the environment, these sensory processes can be affected by the infant's developing motor abilities. Reaching, crawling, and other actions allow the infant to see, touch, and organize his or her experiences in new ways.

How are Infants Tested

Habituation Procedures, *that is measuring decreased responsiveness to a stimulus after repeated presentations*, have increasingly been used to evaluate infants to study the development of perceptual and memory skills. Phelps (2005) describes a habituation procedure used when measuring the rate of the sucking reflex. Researchers first measure the initial baseline rate of sucking to a pacifier equipped with transducers that measure muscle contractions. Next, an auditory stimulus is presented, such as a human voice uttering a speech sound such as "da." The rate of sucking will typically increase with the new sound, but then decrease to baseline levels as "da" is repeatedly presented, showing habituation. If the sound "ma" was then presented, the rate of sucking would again increase, demonstrating that the infant can discriminate between these two stimuli.

Additionally, the speed or efficiency with which infants show habituation has been shown to predict outcomes in behaviors such as language acquisition and verbal and nonverbal intelligence. Infants who show difficulty during habituation, or habituate at slower than normal rates, have been found to be at an increased risk for significant developmental delays. Infants with Down syndrome, teratogen-exposed infants, malnourished infants, and premature infants have all been studied. Researchers have found that at the

age of 16 months, high-risk infants show rates of habituation comparable to newborn infants (Phelps, 2005).

3.5: Nutrition

Breast milk is considered the ideal diet for newborns. Colostrum, the first breast milk produced during pregnancy and just after birth has been described as "liquid gold" (United States Department of Health and Human Services (USDHHS), 2011). It is very rich in nutrients and antibodies. Breast milk changes by the third to fifth day after birth, becoming much thinner, but containing just the right amount of fat, sugar, water and proteins to support overall physical and neurological development. For most babies, breast milk is also easier to digest than formula. Formula fed infants experience more diarrhea and upset stomachs. The absence of antibodies in formula often results in a higher rate of ear infections and respiratory infections. Children who are breastfed have lower rates of childhood leukemia, asthma, obesity, type 1 and 2 diabetes, and a lower risk of SIDS. The USDHHS recommends that mothers breast feed their infants until at least 6 months of age and that breast milk be used in the diet throughout the first year or two.



Figure 3.11: Breastfeeding.

Several recent studies have reported that it is not just babies that benefit from breastfeeding. Breastfeeding stimulates contractions in the uterus to help it regain its normal size, and women who

breastfeed are more likely to space their pregnancies further apart. Mothers who breastfeed are at lower risk of developing breast cancer (Islami et al., 2015), especially among higher risk racial and ethnic groups (Islami et al., 2015; Redondo et al., 2012). Women who breastfeed have lower rates of ovarian cancer (Titus-Ernstoff, Rees, Terry, & Cramer, 2010), reduced risk for developing Type 2 diabetes (Schwarz et al., 2010; Gunderson, et al., 2015), and rheumatoid arthritis (Karlson, Mandl, Hankinson, & Grodstein, 2004). In most studies these benefits have been seen in women who breastfeed longer than 6 months.

However, most mothers who breastfeed in the United States stop breastfeeding at about 6-8 weeks, often in order to return to work outside the home (USDHHS, 2011). Mothers can certainly continue to provide breast milk to their babies by expressing and freezing the milk to be bottle fed at a later time or by being available to their infants at feeding time. However, some mothers find that after the initial encouragement they receive in the hospital to breastfeed, the outside world is less supportive of such efforts. Some workplaces support breastfeeding mothers by providing flexible schedules and welcoming infants, but many do not. In addition, not all women may be able to breastfeed. Women with HIV are routinely discouraged from breastfeeding as the infection may pass to the infant. Similarly, women who are taking certain medications or undergoing radiation treatment may be told not to breastfeed (USDHHS, 2011).

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 year's worth of formula and feeding supplies can cost well over $1,500 (USDHHS, 2011).

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 & Woodward, 1999). This is good news for

mothers who may be unable to breastfeed for a variety of reasons and for fathers who might feel left out.

When to Introduce More Solid Foods

Solid foods should not be introduced until the infant is ready. According to The Clemson University Cooperative Extension (2014), some things to look for include that the infant:

- can sit up without needing support
- can hold its head up without wobbling
- shows interest in foods others are eating
- is still hungry after being breastfed or formula fed
- is able to move foods from the front to the back of the mouth
- is able to turn away when they have had enough

For many infants who are 4 to 6 months of age, breast milk or formula can be supplemented with more solid foods. The first semi-solid foods that are introduced are iron-fortified infant cereals mixed with breast milk or formula. Typically rice, oatmeal, and barley cereals are offered as a number of infants are sensitive to more wheat based cereals. Finger foods such as toast squares, cooked vegetable strips, or peeled soft fruit can be introduced by 10-12 months. New foods should be introduced one at a time, and the new food should be fed for a few days in a row to allow the baby time to adjust to the new food. This also allows parents time to assess if the child has a food allergy. Foods that have multiple ingredients should be avoided until parents have assessed how the child responds to each ingredient separately. Foods that are sticky (such as peanut butter or taffy), cut into large chunks (such as cheese and harder meats), and firm and round (such as hard candies, grapes, or cherry tomatoes) should be avoided as they are a choking hazard. Honey and Corn syrup should be avoided as these often

contain botulism spores. In children under 12 months this can lead to death (Clemson University Cooperative Extension, 2014).

Global Considerations and Malnutrition

Children in developing countries and countries experiencing the harsh conditions of war are at risk for two major types of malnutrition, also referred to as wasting. 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 3.12: Kwashiorkor. Photo Courtesy Centers for Disease Control and Prevention.

Around the world the rates of wasting have been dropping.

However, according to the World Health Organization and UNICEF, in 2014 there were 50 million children under the age of five that experienced these forms of wasting, and 16 million were severely wasted (UNICEF, 2015). This works out to 1 child in every 13 children in the world suffers from some form of wasting, and the majority of these children live in Asia (34.3 million) and Africa (13.9 million). Wasting can occur as a result of severe food shortages, regional diets that lack certain proteins and vitamins, or infectious diseases that inhibit appetite (Latham, 1997).

The consequences of wasting depend on how late in the progression of the disease parents and guardians seek medical treatment for their children. Unfortunately, in some cultures families do not seek treatment early, and as a result by the time a child is hospitalized the child often dies within the first three days after admission (Latham, 1997). Several studies have reported long-term cognitive effects of early malnutrition (Galler & Ramsey, 1989; Galler, Ramsey, Salt & Archer, 1987; Richardson, 1980), even when home environments were controlled (Galler, Ramsey, Morley, Archer & Salt, 1990). Lower IQ scores (Galler et al., 1987), poor attention (Galler & Ramsey, 1989), and behavioral issues in the classroom (Galler et al., 1990) have been reported in children with a history of serious malnutrition in the first few years of life.

3.6: Piaget and the Sensorimotor Stage

Learning Objectives: Cognitive Development in Infancy and Toddlerhood

- Compare the Piagetian concepts of schema, assimilation, and accommodation
- List and describe the six substages of sensorimotor intelligence
- Describe the characteristics of infant memory
- Describe components and developmental progression of language
- Identify and compare the theories of language

Schema, Assimilation and Accommodation

Piaget believed that we are continuously trying to maintain cognitive equilibrium, or a balance, in what we see and what we know (Piaget, 1954). Children have much more of a challenge in maintaining this balance because they are constantly being confronted with new situations, new words, new objects, etc. All this new information needs to be organized, and *a framework for organizing information is referred to as a* **Schema.** Children develop schemata through the processes of assimilation and accommodation.

When faced with something new, a child may demonstrate **Assimilation,** *which is fitting the new information into an existing schema*, such as calling all animals with four legs "doggies" because he or she knows the word doggie. Instead of assimilating the information, the child may demonstrate **Accommodation**, *which is expanding the framework of knowledge to accommodate the new situation* and thus learning a new word to more accurately name

the animal. For example, recognizing that a horse is different than a zebra means the child has accommodated, and now the child has both a zebra schema and a horse schema. Even as adults we continue to try and "make sense" of new situations by determining whether they fit into our old way of thinking (assimilation) or whether we need to modify our thoughts (accommodation).

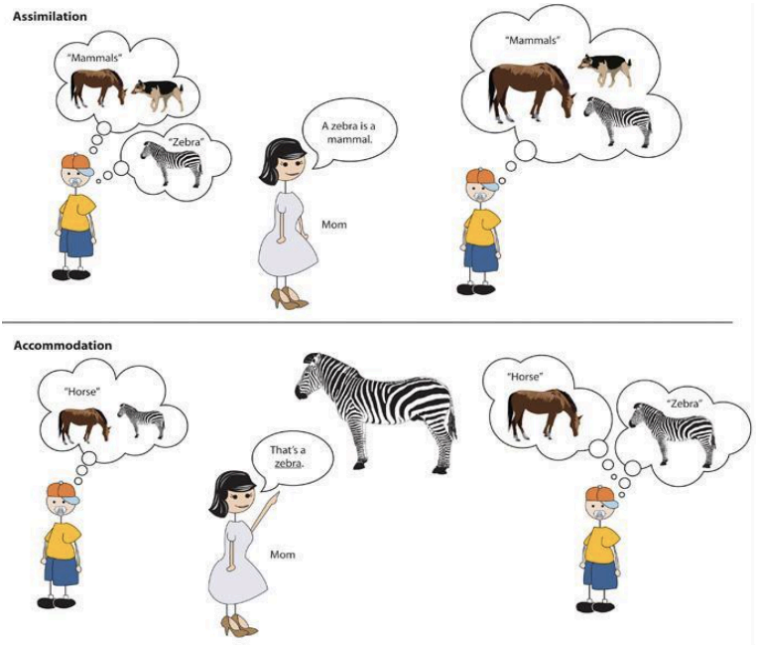


Figure 3.13: Assimilation and accommodation.

According to the Piagetian perspective, infants learn about the world primarily through their senses and motor abilities (Harris, 2005). These basic motor and sensory abilities provide the foundation for the cognitive skills that will emerge during the subsequent stages of cognitive development. *The first stage of cognitive development is referred to as the* **Sensorimotor Period** and it occurs through six substages. Table 3.2 identifies the ages typically associated with each substage.

Table 3.2: Infa

Substage 1	
Substage 2	
Substage 3	
Substage 4	
Substage 5	
Substage 6	

Substage 1: Reflexes. Newborns learn about their world through the use of their reflexes, such as when sucking, reaching, and grasping. Eventually the use of these reflexes becomes more deliberate and purposeful.

Substage 2: Primary Circular Reactions. During these next 3 months, the infant begins to actively involve his or her own body in some form of repeated activity. An infant may accidentally engage in a behavior and find it interesting such as making a vocalization. This interest motivates trying to do it again and helps the infant learn a new behavior that originally occurred by chance. The behavior is identified as circular and primary because it centers on the infant's own body.

Substage 3: Secondary Circular Reactions. The infant begins to interact with objects in the environment. At first the infant interacts with objects (e.g. a crib mobile) accidentally, but then these contacts with the objects are deliberate and become a repeated activity. 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, for example, the

infant is able to bang two lids together from the cupboard when seated on the kitchen floor.



Figure 3.14: A baby interacting with a crib mobile.

Substage 4: Coordination of Secondary Circular Reactions. The infant combines these basic reflexes and uses planning and coordination to achieve a specific goal. 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 become capable of having a thought and carrying out a planned, goal-directed activity. For example, an infant sees a toy car under the kitchen table and then crawls, reaches, and grabs the toy. The infant is coordinating both internal and external activities to achieve a planned goal.

Substage 5: Tertiary Circular Reactions. The toddler is considered a "little scientist" and begins exploring the world in a trial-and-error manner, using both motor skills and planning abilities. For example, the child might throw her ball down the stairs to see what happens. The toddler's active engagement in experimentation helps them learn about their world.

Substage 6: Beginning of Representational Thought. The sensorimotor period ends with the appearance of symbolic or representational thought. The toddler now has a basic

understanding that objects can be used as symbols. Additionally, the child is able to solve problems using mental strategies, to remember something heard days before and repeat it, and to engage in pretend play. This initial movement from a "hands-on" approach to knowing about the world to the more mental world of substage six marks the transition to preoperational thought.



Figure 3.15: Children playing together.

Development of Object Permanence

A critical milestone during the sensorimotor period is the development of object permanence. **Object permanence** *is the understanding that even if something is out of sight, it still exists* (Bogartz, Shinskey, & 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. Piaget emphasizes this construct because it was an objective way for children to demonstrate that they can mentally represent their

world. Children have typically acquired this milestone by 8 months. Once toddlers have mastered **object permanence,** they enjoy games like hide and seek, and they realize that when someone leaves the room they will come back. Toddlers also point to pictures in books and look in appropriate places when you ask them to find objects.

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* (Crain, 2005). 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.

Critique of Piaget: Piaget thought that children's ability to understand objects, such as learning that a rattle makes a noise when shaken, was a cognitive skill that develops slowly as a child matures and interacts with the environment. Today, developmental psychologists think Piaget was incorrect. Researchers have found that even very young children understand objects and how they work long before they have experience with those objects (Baillargeon, 1987; Baillargeon, Li, Gertner, & Wu, 2011). For example, Piaget believed that infants did not fully master object permanence until substage 5 of the sensorimotor period (Thomas, 1979). However, infants seem to be able to recognize that objects have permanence at much younger ages. Diamond (1985) found that infants show earlier knowledge if the waiting period is shorter. At age 6 months, they retrieved the hidden object if their wait for retrieving the object is no longer than 2 seconds, and at 7 months if the wait is no longer than 4 seconds.

Even earlier, children as young as 3 months old demonstrated knowledge of the properties of objects that they had only viewed and did not have prior experience with them. In one study, 3-month-old infants were shown a truck rolling down a track and behind a screen. The box, which appeared solid but was actually

hollow, was placed next to the track. The truck rolled past the box as would be expected. Then the box was placed on the track to block the path of the truck. When the truck was rolled down the track this time, it continued unimpeded. The infants spent significantly more time looking at this impossible event (Figure 3.16). Baillargeon (1987) concluded that they knew solid objects cannot pass through each other. Baillargeon's findings suggest that very young children have an understanding of objects and how they work, which Piaget (1954) would have said is beyond their cognitive abilities due to their limited experiences in the world.

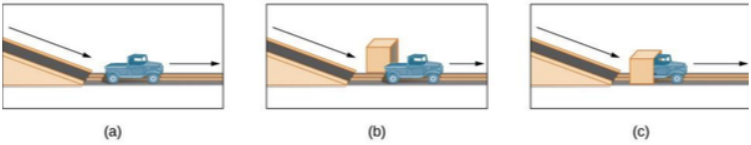


Figure 3.16: In Baillargeon's (1987) study,infants observed a truck (a) roll down an unobstructed track, (b) roll down an unobstructed track with an obstruction (box) beside it, and (c) roll down and pass through what appeared to be an obstruction.

3.7: Infant Memory

Memory requires a certain degree of brain maturation, so it should not be surprising that infant memory is rather fleeting and fragile. As a result, older children and adults experience **infantile amnesia**, *the inability to recall memories from the first few years of life*. Several hypotheses have been proposed for this amnesia. From the biological perspective, it has been suggested that infantile amnesia is due to the immaturity of the infant brain, especially those areas that are crucial to the formation of autobiographical memory, such as the hippocampus. From the cognitive perspective, it has been suggested that the lack of linguistic skills of babies and toddlers limit their ability to mentally represent events; thereby, reducing their ability to encode memory. Moreover, even if infants do form such early memories, older children and adults may not be able to access them because they may be employing very different, more linguistically based, retrieval cues than infants used when forming the memory. Finally, social theorists argue that episodic memories of personal experiences may hinge on an understanding of "self", something that is clearly lacking in infants and young toddlers.

However, in a series of clever studies Carolyn Rovee-Collier and her colleagues have demonstrated that infants can remember events from their life, even if these memories are short- lived. Three-month-old infants were taught that they could make a mobile hung over their crib shake by kicking their legs. The infants were placed in their crib, on their backs. A ribbon was tied to one foot and the other end to a mobile. At first infants made random movements, but then came to realize that by kicking they could make the mobile shake. After two 9 minute sessions with the mobile, the mobile was removed. One week later the mobile was reintroduced to one group of infants and most of the babies immediately started kicking their legs, indicating that they remembered their prior experience with the mobile. A second group of infants was shown the mobile

two weeks later and the babies made only random movements. The memory had faded (Rovee-Collier, 1987; Giles & Rovee-Collier, 2011). Rovee-Collier and Hayne (1987) found that 3-month-olds could remember the mobile after two weeks if they were shown the mobile and watched it move, even though they were not tied to it. This reminder helped most infants to remember the connection between their kicking and the movement of the mobile. Like many researchers of infant memory, Rovee-Collier (1990) found infant memory to be very context dependent. In other words, the sessions with the mobile and the later retrieval sessions had to be conducted under very similar circumstances or else the babies would not remember their prior experiences with the mobile. For instance, if the first mobile had had yellow blocks with blue letters, but at the later retrieval session the blocks were blue with yellow letters, the babies would not kick.

Infants older than 6 months of age can retain information for longer periods of time; they also need less reminding to retrieve information in memory. Studies of **Deferred Imitation**, that is, *the imitation of actions after a time delay*, can occur as early as six-months of age (Campanella & Rovee-Collier, 2005), but only if infants are allowed to practice the behavior they were shown. By 12 months of age, infants no longer need to practice the behavior in order to retain the memory for four weeks (Klein & Meltzoff, 1999).

3.8: Language

Our vast intelligence also allows us to have **Language**, *a system of communication that uses symbols in a regular way to create meaning*. Language gives us the ability to communicate our intelligence to others by talking, reading, and writing. Although other species have at least some ability to communicate, none of them have language. There are many components of language that will now be reviewed.

Components of Language



Figure 3.17: A child using a toy telephone.

Phoneme: A **phoneme** is *the smallest unit of sound that makes a meaningful difference in a language*. The word "bit" has three phonemes. In spoken languages, phonemes are produced by the positions and movements of the vocal tract, including our lips, teeth, tongue, vocal cords, and throat, whereas in sign languages phonemes are defined by the shapes and movement of the hands.

There are hundreds of unique phonemes that can be made by human speakers, but most languages only use a small subset of the possibilities. English contains about 45 phonemes, whereas other languages have as few as 15 and others more than 60. The Hawaiian language contains less phonemes as it includes only 5 vowels (a, e, i, o, and u) and 7 consonants (h, k, l, m, n, p, and w).

Infants are born able to detect all phonemes, but they lose their ability to do so as they get older; by 10 months of age a child's ability to recognize phonemes becomes very similar to that of the adult speakers of the native language. Phonemes that were initially differentiated come to be treated as equivalent (Werker & Tees, 2002).

Morpheme: Whereas phonemes are the smallest units of sound in language, a **morpheme** is *a string of one or more phonemes that makes up the smallest units of meaning in a language*. Some morphemes are prefixes and suffixes used to modify other words. For example, the syllable "re-" as in "rewrite" or "repay" means "to do again," and the suffix "-est" as in "happiest" or "coolest" means "to the maximum."

Semantics: Semantics refers to *the set of rules we use to obtain meaning from morphemes*. For example, adding "ed" to the end of a verb makes it past tense.

Syntax: Syntax is *the set of rules of a language by which we construct sentences*. Each language has a different syntax. The syntax of the English language requires that each sentence have a noun and a verb, each of which may be modified by adjectives and adverbs. Some syntaxes make use of the order in which words appear. For example, in English "The man bites the dog" is different from "The dog bites the man."

Pragmatics: The social side of language is expressed through **pragmatics**, or *how we communicate effectively and appropriately with others*. Examples of pragmatics include turn- taking, staying on topic, volume and tone of voice, and appropriate eye contact.

Lastly, words do not possess fixed meanings but change their interpretation as a function of the context in which they are spoken.

We use **contextual information**, *the information surrounding language*, to help us interpret it. Examples of contextual information include our knowledge and nonverbal expressions such as facial expressions, postures, and gestures. Misunderstandings can easily arise if people are not attentive to contextual information or if some of it is missing, such as it may be in newspaper headlines or in text messages.

Language Developmental Progression

An important aspect of cognitive development is language acquisition. The order in which children learn language structures is consistent across children and cultures (Hatch, 1983). Starting before birth, babies begin to develop language and communication skills. At birth, babies recognize their mother's voice and can discriminate between the language(s) spoken by their mothers and foreign languages, and they show preferences for faces that are moving in synchrony with audible language (Blossom & Morgan, 2006; Pickens et al., 1994; Spelke & Cortelyou, 1981).



Figure 3.18: A baby crying.

Do newborns communicate? Of course they do. They do not, however, communicate with the use of oral 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: In terms of producing spoken language, babies begin to coo almost immediately. **Cooing** *is a one-syllable combination of a consonant and a vowel sound* (e.g., coo or ba). Interestingly, babies replicate sounds from their own languages. A baby whose parents speak French will coo in a different tone than a baby whose parents speak Spanish or Urdu. These gurgling, musical vocalizations can serve as a source of entertainment to an infant who has been laid down for a nap or seated in a carrier on a car ride. Cooing serves as practice for vocalization, as well as the infant hears the sound of his or her own voice and tries to repeat sounds that are entertaining. Infants also begin to learn the pace and pause of conversation as they alternate their vocalization with that of someone else and then take their turn again when the other person's vocalization has stopped.

At about four to six months of age, infants begin making even more elaborate vocalizations that include the sounds required for any language. Guttural sounds, clicks, consonants, and vowel sounds stand ready to equip the child with the ability to repeat whatever sounds are characteristic of the language heard. Eventually, these sounds will no longer be used as the infant grows more accustomed to a particular language.

At about 7 months, infants begin **Babbling**, engaging in *intentional vocalizations that lack specific meaning and comprise a consonant-vowel repeated sequence, such as ma-ma-ma, da-da-da.* Children babble as practice in creating specific sounds, and by the time they are 1 year old, the babbling uses primarily the sounds of the language that they are learning (de Boysson- Bardies, Sagart, & Durand, 1984). These vocalizations have a conversational tone that sounds meaningful even though it isn't. Babbling also helps children understand the social, communicative function of language. Children who are exposed to sign language babble in sign by making hand movements that represent real language (Petitto & Marentette, 1991).

Gesturing: Children communicate information through gesturing long before they speak, and there is some evidence that gesture

usage predicts subsequent language development (Iverson & Goldin-Meadow, 2005). Deaf babies also use gestures to communicate wants, reactions, and feelings. Because gesturing seems to be easier than vocalization for some toddlers, sign language is sometimes taught to enhance one's ability to communicate by making use of the ease of gesturing. The rhythm and pattern of language is used when deaf babies sign just as it is when hearing babies babble.

Understanding: At around ten months of age, the infant *can understand more than he or she can say, which is referred to as* **receptive language**. You may have experienced this phenomenon as well if you have ever tried to learn a second language. You may have been able to follow a conversation more easily than contribute to it. One of the first words that children understand is their own name, usually by about 6 months, followed by commonly used words like "bottle," "mama," and "doggie" by 10 to 12 months (Mandel, Jusczyk, & Pisoni, 1995). Infants shake their head "no" around 6–9 months, and they respond to verbal requests to do things like "wave bye-bye" or "blow a kiss" around 9–12 months. Children also use contextual information, particularly the cues that parents provide, to help them learn language. Children learn that people are usually referring to things that they are looking at when they are speaking (Baldwin, 1993), and that that the speaker's emotional expressions are related to the content of their speech.

Holophrasic 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* **Holophrasic Speech.** For example, the child may say "ju" for the word "juice" and use this sound when referring to a bottle. The listener must interpret the meaning of the holophrase, and when this is someone who has spent time with the child, interpretation is not too difficult. But, someone who has not been around the child will have trouble knowing what is meant. Imagine the parent who to a friend exclaims, "Ezra's talking all the time now!"

The friend hears only "ju da ga" to which the parent explains means, "I want some milk when I go with Daddy."

Language Errors: The early utterances of children contain many errors, for instance, confusing /b/ and /d/, or /c/ and /z/. The words children create are often simplified, in part because they are not yet able to make the more complex sounds of the real language (Dobrich & Scarborough, 1992). Children may say "keekee" for kitty, "nana" for banana, and "vesketti" for spaghetti because it is easier. Often these early words are accompanied by gestures that may also be easier to produce than the words themselves. Children's pronunciations become increasingly accurate between 1 and 3 years, but some problems may persist until school age.

A child who learns that a word stands for an object may initially think that the *word can be used for only that particular object*, which is referred to as **Underextension.** Only the family's Irish Setter is a "doggie", for example. More often, however, a child may think that *a label applies to all objects that are similar to the original object*, which is called **Overextension.** For example, all animals become "doggies".

First words and cultural influences: First words if the child is using English tend to be nouns. The child labels objects such as cup, ball, or other items that they regularly interact with. In a verb-friendly language such as Chinese, however, children may learn more verbs. This may also be due to the different emphasis given to objects based on culture. Chinese children may be taught to notice action and relationships between objects, while children from the United States may be taught to name an object and its qualities (color, texture, size, etc.). These differences can be seen when comparing interpretations of art by older students from China and the United States.

Two word sentences and telegraphic (text message) speech: By the time they become toddlers, children have a vocabulary of about 50-200 words and begin putting those words together in telegraphic speech, such as "baby bye-bye" or "doggie pretty". Words needed to convey messages are used, but the articles and other parts of speech necessary for grammatical correctness are

not yet used. These expressions sound like a telegraph, or perhaps a better analogy today would be that they read like a text message. **Telegraphic Speech/Text Message Speech** *occurs when unnecessary words are not used.* "Give baby ball" is used rather than "Give the baby the ball."

Infant-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 **Infant-directed Speech.** *It involves exaggerating the vowel and consonant sounds, using a high-pitched voice, and delivering the phrase with great facial expression* (Clark, 2009). Why is this done? Infants are frequently more attuned to the tone of voice of the person speaking than to the content of the words themselves, and are aware of the target of speech. Werker, Pegg, and McLeod (1994) found that infants listened longer to a woman who was speaking to a baby than to a woman who was speaking to another adult. It may be in order to clearly articulate the sounds of a word so that the child can hear the sounds involved. It may also be because when this type of speech is used, the infant pays more attention to the speaker and this sets up a pattern of interaction in which the speaker and listener are in tune with one another.

Theories of Language Development

Psychological theories of language learning differ in terms of the importance they place on nature and nurture. Remember that we are a product of both nature and nurture. Researchers now believe that language acquisition is partially inborn and partially learned through our interactions with our linguistic environment (Gleitman & Newport, 1995; Stork & Widdowson, 1974).

Learning Theory: Perhaps the most straightforward explanation of language development is that it occurs through the principles

of learning, including association and reinforcement (Skinner, 1953). Additionally, Bandura (1977) described the importance of observation and imitation of others in learning language. There must be at least some truth to the idea that language is learned through environmental interactions or nurture. Children learn the language that they hear spoken around them rather than some other language. Also supporting this idea is the gradual improvement of language skills with time. It seems that children modify their language through imitation and reinforcement, such as parental praise and being understood. For example, when a two-year-old child asks for juice, he might say, "me juice," to which his mother might respond by giving him a cup of apple juice.

However, language cannot be entirely learned. For one, children learn words too fast for them to be learned through reinforcement. Between the ages of 18 months and 5 years, children learn up to 10 new words every day (Anglin, 1993). More importantly, language is more *generative* than it is imitative**.** Language is not a predefined set of ideas and sentences that we choose when we need them, but rather a system of rules and procedures that allows us to create an infinite number of statements, thoughts, and ideas, including those that have never previously occurred. When a child says that she "swimmed" in the pool, for instance, she is showing generativity. No adult speaker of English would ever say "swimmed," yet it is easily generated from the normal system of producing language.

Other evidence that refutes the idea that all language is learned through experience comes from the observation that children may learn languages better than they ever hear them. Deaf children whose parents do not speak ASL very well nevertheless are able to learn it perfectly on their own, and may even make up their own language if they need to (Goldin-Meadow & Mylander, 1998). A group of deaf children in a school in Nicaragua, whose teachers could not sign, invented a way to communicate through made-up signs (Senghas, Senghas, & Pyers, 2005). The development of this new Nicaraguan Sign Language has continued and changed as new generations of students have come to the school and started

using the language. Although the original system was not a real language, it is becoming closer and closer every year, showing the development of a new language in modern times.





Figure 3.19: Three theorists who provide explanations for language development. From left: B.F. Skinner. Albert Bandura. Noam Chomsky.

Chomsky and Nativism: The linguist Noam Chomsky is a believer in the nature approach to language, arguing that human brains contain a **Language Acquisition Device** that includes a *universal grammar* that underlies all human language (Chomsky, 1965, 1972). According to this approach, each of the many languages spoken around the world (there are between 6,000 and 8,000) is an individual example of the same underlying set of procedures that are hardwired into human brains. Chomsky's account proposes that children are born with a knowledge of general rules of syntax that determine how sentences are constructed. Language develops as long as the infant is exposed to it. No teaching, training, or reinforcement is required for language to develop as proposed by Skinner.

Chomsky differentiates between the **deep structure** of an idea; that is, *how the idea is represented in the fundamental universal grammar that is common to all languages*, and the **surface structure** of the idea or *how it is expressed in any one language*. Once we hear or express a thought in surface structure, we generally forget exactly how it happened. At the end of a lecture, you will remember a lot of the deep structure (i.e., the ideas expressed by the instructor), but you cannot reproduce the surface

structure (the exact words that the instructor used to communicate the ideas).

Although there is general agreement among psychologists that babies are genetically programmed to learn language, there is still debate about Chomsky's idea that there is a universal grammar that can account for all language learning. Evans and Levinson (2009) surveyed the world's languages and found that none of the presumed underlying features of the language acquisition device were entirely universal. In their search they found languages that did not have noun or verb phrases, that did not have tenses (e.g., past, present, future), and even some that did not have nouns or verbs at all, even though a basic assumption of a universal grammar is that all languages should share these features.

Critical Periods: Anyone who has tried to master a second language as an adult knows the difficulty of language learning. Yet children learn languages easily and naturally. Children who are not exposed to language early in their lives will likely never learn one. Case studies, including Victor the "Wild Child," who was abandoned as a baby in France and not discovered until he was 12, and Genie, a child whose parents kept her locked in a closet from 18 months until 13 years of age, are (fortunately) two of the only known examples of these deprived children. Both of these children made some progress in socialization after they were rescued, but neither of them ever developed language (Rymer, 1993). This is also why it is important to determine quickly if a child is deaf, and to communicate in sign language immediately. Deaf children who are not exposed to sign language during their early years will likely never learn it (Mayberry, Lock, & Kazmi, 2002). The concept of critical periods highlights the importance of both nature and nurture for language development.



Figure 3.20: Victor of Aveyon.

Social pragmatics: Another view emphasizes the very social nature of human language. Language from this view is not only a cognitive skill, but also a social one. Language is a tool humans use to communicate, connect to, influence, and inform others. Most of all, language comes out of a need to cooperate. The social nature of language has been demonstrated by a number of studies that have shown that children use several pre-linguistic skills (such as pointing and other gestures) to communicate not only their own needs, but what others may need. So a child watching her mother search for an object may point to the object to help her mother find it.

Eighteen-month to 30-month-olds have been shown to make linguistic repairs when it is clear that another person does not understand them (Grosse, Behne, Carpenter & Tomasello, 2010). Grosse et al. (2010) found that even when the child was given the desired object, if there had been any misunderstanding along the

way (such as a delay in being handed the object, or the experimenter calling the object by the wrong name), children would make linguistic repairs. This would suggest that children are using language not only as a means of achieving some material goal, but to make themselves understood in the mind of another person.

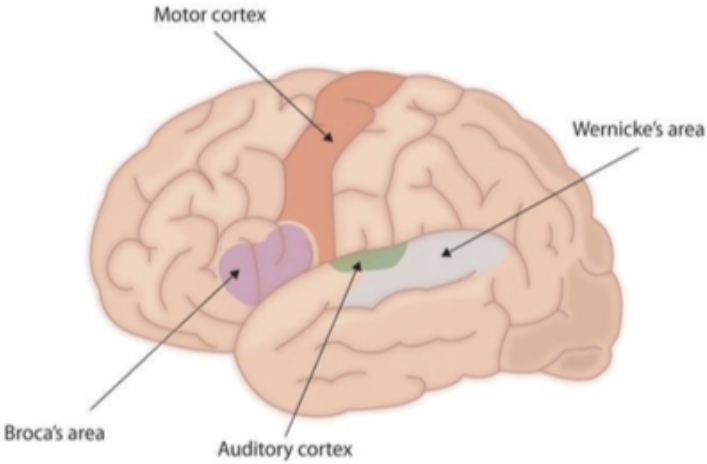


Figure 3.21: Drawing of Brain Showing Broca's and Wernicke's Areas. For most people, the left hemisphere is specialized for language. Broca's area, near the motor cortex, is involved in language production, whereas Wernicke's area, near the auditory cortex, is specialized for language comprehension.

Brain Areas for Language: For the 90% of people who are right-handed, language is stored and controlled by the left cerebral cortex, although for some left-handers this pattern is reversed.Thesedifferencescan easily be seen in the results of neuroimaging studies that show that listening to and producing language creates greater activity in the left hemisphere than in the right. **Broca's area**, *an area in front of the left hemisphere near the motor cortex, is responsible for language production* (Figure 3.21). This area was first localized in the 1860s by the French physician Paul Broca, who studied patients with lesions to various parts of

the brain. **Wernicke's area**, *an area of the brain next to the auditory cortex, is responsible for language comprehension.*

3.9: Psychosociological Development in Infancy and Toddlerhood

Learning Objectives: Psychosocial Development in Infancy and Toddlerhood

- Identify styles of teperament and explore goodness-of-fit
- Describe the early theories of attachment
- Contrast styles of attachment according to the Strange Situation Technique
- Explain the factors that influence attachment
- Describe self-awareness, stranger wariness, and separation anxiety
- Use Erikson's theory to characterize psychosocial development during infancy

Temperament

Perhaps you have spent time with a number of infants. How were they alike? How did they differ? How do you compare 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 the innate characteristics of the infant, including mood, activity level, and emotional reactivity, noticeable soon after birth.*

In a 1956 landmark study, Chess and Thomas (1996) evaluated 141 children's temperament based on parental interviews. Referred to as the New York Longitudinal Study, infants were assessed on 9 dimensions of temperament including: Activity level, rhythmicity

(regularity of biological functions), approach/withdrawal (how children deal with new things), adaptability to situations, intensity of reactions, threshold of responsiveness (how intense a stimulus has to be for the child to react), quality of mood, distractibility, attention span, and persistence. Based on the infants' behavioral profiles, they were categorized into three general types of temperament:

- **Easy Child** (40%) who is able to quickly adapt to routine and new situations, remains calm, is easy to soothe, and usually is in a positive mood.
- **Difficult Child** (10%) who reacts negatively to new situations, has trouble adapting to routine, is usually negative in mood, and cries frequently.
- **Slow-to-Warm-Up Child** (15%) has a low activity level, adjusts slowly to new situations and is often negative in mood.

As can be seen the percentages do not equal 100% as some children were not able to be placed neatly into one of the categories. Think about how you might approach each type of child in order to improve your interactions with them. An easy child will not need much extra attention, while 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 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.* Parents who recognize each child's temperament and accept it, will nurture more effective interactions with the child and encourage more adaptive functioning. For example, an adventurous child whose parents regularly take her outside on hikes would provide a good "fit" to her temperament.

Parenting is bidirectional: Not only do parents affect their children, children influence their parents. Child characteristics, such as temperament, affect parenting behaviors and roles. For

example, an infant with an easy temperament may enable parents to feel more effective, as they are easily able to soothe the child and elicit smiling and cooing. On the other hand, a cranky or fussy infant elicits fewer positive reactions from his or her parents and may result in parents feeling less effective in the parenting role (Eisenberg et al., 2008). Over
time, parents of more difficult children may become more punitive and less patient with their children (Clark, Kochanska, & Ready, 2000; Eisenberg et al., 1999; Kiff, Lengua, & Zalewski, 2011). Parents who have a fussy, difficult child are less satisfied with their marriages and have greater challenges in balancing work and family roles (Hyde, Else-Quest, & Goldsmith, 2004). Thus, child temperament is one of the child characteristics that influences how parents behave with their children.

Temperament does not 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. In contrast, **personality**, *defined as an individual's consistent pattern of feeling, thinking, and behaving*, is the result of the continuous interplay between biological disposition and experience.



Figure 3.22: A baby touching a parent's cheek.

Personality also develops from temperament in other ways (Thompson, Winer, & Goodvin, 2010). As children mature

biologically, temperamental characteristics emerge and change over time. A newborn is not capable of much self-control, but as brain-based capacities for self- control advance, temperamental changes in self-regulation become more apparent. For example, a newborn who cries frequently doesn't necessarily have a grumpy personality; over time, with sufficient parental support and increased sense of security, the child might be less likely to cry.

In addition, personality is made up of many other features besides temperament. Children's developing self-concept, their motivations to achieve or to socialize, their values and goals, their coping styles, their sense of responsibility and conscientiousness, and many other qualities are encompassed into personality. These qualities are influenced by biological dispositions, but even more by the child's experiences with others, particularly in close relationships, that guide the growth of individual characteristics. Indeed, personality development begins with the biological foundations of temperament but becomes increasingly elaborated, extended, and refined over time. The newborn that parents gazed upon thus becomes an adult with a personality of depth and nuance.

Infant Emotions

At birth, infants exhibit two emotional responses: Attraction and withdrawal. They show attraction to pleasant situations that bring comfort, stimulation, and pleasure, and they withdraw from unpleasant stimulation such as bitter flavors or physical discomfort. At around two months, infants exhibit social engagement in the form of social smiling as they respond with smiles to those who engage their positive attention (Lavelli & Fogel, 2005).

Social smiling becomes more stable and organized as infants learn to use their smiles to engage their parents in interactions. Pleasure is expressed as laughter at 3 to 5 months of age, and displeasure becomes more specific as fear, sadness, or anger between ages 6

and 8 months. Anger is often the reaction to being prevented from obtaining a goal, such as a toy being removed (Braungart-Rieker, Hill-Soderlund, & Karrass, 2010). In contrast, sadness is typically the response when infants are deprived of a caregiver (Papousek, 2007). *Fear is often associated with the presence of a stranger, known as* **stranger wariness,** *or the departure of significant others known as* **separation anxiety.** Both appear sometime between 6 and 15 months after object permanence has been acquired. Further, there is some indication that infants may experience jealousy as young as 6 months of age (Hart & Carrington, 2002).

Emotions are often divided into two general categories: **Basic emotions**, such as *interest, happiness, anger, fear, surprise, sadness and disgust*, which appear first, and **self-conscious emotions**, such as *envy, pride, shame, guilt, doubt, and embarrassment*. Unlike primary emotions, secondary emotions appear as children start to develop a self-concept, and require social instruction on when to feel such emotions. The situations in which children learn self-conscious emotions varies from culture to culture. Individualistic cultures teach us to feel pride in personal accomplishments, while in more collective cultures children are taught to not call attention to themselves, unless you wish to feel embarrassed for doing so (Akimoto & Sanbinmatsu, 1999).

Facial expressions of emotion are important regulators of social interaction. In the developmental literature, this concept has been investigated under the concept of **social referencing;** that is, *the process whereby infants seek out information from others to clarify a situation and then use that information to act* (Klinnert, Campos, & Sorce, 1983). To date, the strongest demonstration of social referencing comes from work on the visual cliff. In the first study to investigate this concept, Campos and colleagues (Sorce, Emde, Campos, & Klinnert, 1985) placed mothers on the far end of the "cliff" from the infant. Mothers first smiled to the infants and placed a toy on top of the safety glass to attract them; infants invariably began crawling to their mothers. When the infants were in the center of the table, however, the mother then posed an expression

of fear, sadness, anger, interest, or joy. The results were clearly different for the different faces; no infant crossed the table when the mother showed fear; only 6% did when the mother posed anger, 33% crossed when the mother posed sadness, and approximately 75% of the infants crossed when the mother posed joy or interest.



Figure 3.23: A smiling baby.

Other studies provide similar support for facial expressions as regulators of social interaction. Experimenters posed facial expressions of neutral, anger, or disgust toward babies as they moved toward an object and measured the amount of inhibition the babies showed in touching the object (Bradshaw, 1986). The results for 10- and 15-month olds were the same: Anger produced the greatest inhibition, followed by disgust, with neutral the least. This study was later replicated using joy and disgust expressions, altering the method so that the infants were not allowed to touch the toy (compared with a distractor object) until one hour after exposure to the expression (Hertenstein & Campos, 2004). At 14 months of age, significantly more infants touched the toy when they saw joyful expressions, but fewer touched the toy when the infants saw disgust.

A final emotional change is in self-regulation. **Emotional self-regulation** *refers to strategies we use to control our emotional states*

so that we can attain goals (Thompson & Goodvin, 2007). This requires effortful control of emotions and initially requires assistance from caregivers (Rothbart, Posner, & Kieras, 2006). Young infants have very limited capacity to adjust their emotional states and depend on their caregivers to help soothe themselves. Caregivers can offer distractions to redirect the infant's attention and comfort to reduce the emotional distress. As areas of the infant's prefrontal cortex continue to develop, infants can tolerate more stimulation. By 4 to 6 months, babies can begin to shift their attention away from upsetting stimuli (Rothbart et al, 2006). Older infants and toddlers can more effectively communicate their need for help and can crawl or walk toward or away from various situations (Cole, Armstrong, & Pemberton, 2010). This aids in their ability to self-regulate. Temperament also plays a role in children's ability to control their emotional states, and individual differences have been noted in the emotional self-regulation of infants and toddlers (Rothbart & Bates, 2006).



Figure 3.24: Sense of self.

Development of sense of self: During the second year of life, children begin to recognize themselves as they gain a sense of self as object. In a classic experiment by Lewis and Brooks (1978)

children 9 to 24 months of age were placed in front of a mirror after a spot of rouge was placed on their nose as their mothers pretended to wipe something off the child's face. If the child reacted by touching his or her own nose rather that of the "baby" in the mirror, it was taken to suggest that the child recognized the reflection as him- or herself. Lewis and Brooks found that somewhere between 15 and 24 months most infants developed a sense of self-awareness. **Self-awareness** *is the realization that you are separate from others* (Kopp, 2011). Once a child has achieved self-awareness, the child is moving toward understanding social emotions such as guilt, shame or embarrassment, as well as, sympathy or empathy.

3.10: Forming Attachments

Attachment *is the close bond with a caregiver from which the infant derives a sense of security*. The formation of attachments in infancy has been the subject of considerable research as attachments have been viewed as foundations for future relationships. Additionally, attachments form the basis for confidence and curiosity as toddlers, and as important influences on self- concept.



Figure 3.25: Mutually enjoyable interactions promote infant bonding. Credit: Peter Shanks.

Freud's Psychoanalytic Theory: According to Freud (1938) infants are oral creatures who obtain pleasure from sucking and mouthing objects. Freud believed the infant will become attached to a person or object that provides this pleasure. Consequently, infants were believed to become attached to their mother because she was the one who satisfied their oral needs and provided pleasure. Freud further believed that the infants will become attached to their mothers "if the mother is relaxed and generous in her feeding practices, thereby allowing the child a lot of oral pleasure," (Shaffer, 1985, p. 435). Was Freud correct in his explanation for why infants became attached?

Harlow's Research: In one classic study showing if nursing was the most important factor to attachment, Wisconsin University

psychologists Harry and Margaret Harlow investigated the responses of young monkeys. The infants were separated from their biological mothers, and two surrogate mothers were introduced to their cages. One, the wire mother, consisted of a round wooden head, a mesh of cold metal wires, and a bottle of milk from which the baby monkey could drink. The second mother was a foam-rubber form wrapped in a heated terry-cloth blanket. The infant monkeys went to the wire mother for food, but they overwhelmingly preferred and spent significantly more time with the warm terry-cloth mother.The warm terry-cloth mother provided no food but did provide comfort (Harlow, 1958). *The infant's need for physical closeness and touching is referred to as* **contact comfort**. Contact comfort is believed to be the foundation for attachment. The Harlows' studies confirmed that babies have social as well as physical needs. Both monkeys and human babies need a secure base that allows them to feel safe. From this base, they can gain the confidence they need to venture out and explore their worlds.

Bowlby's Theory: Building on the work of Harlow and others, John Bowlby developed the concept of attachment theory. He defined attachment as the affectional bond or tie that an infant forms with the mother (Bowlby, 1969). An infant must form this bond with a primary caregiver in order to have normal social and emotional development. In addition, Bowlby proposed that this attachment bond is very powerful and continues throughout life. He used the concept of secure base to define a healthy attachment between parent and child (Bowlby, 1982). A **secure base** *is a parental presence that gives the child a sense of safety as the child explores the surroundings.*

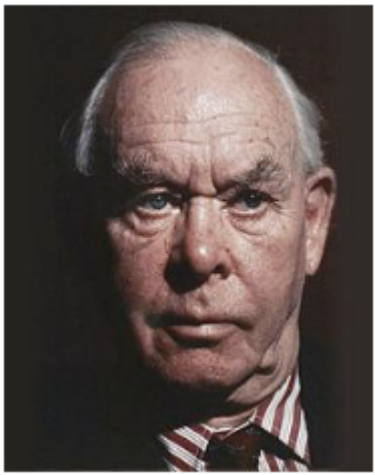


Figure 3.26: John Bowlby.

Bowlby said that two things are needed for a healthy attachment: The caregiver must be responsive to the child's physical, social, and emotional needs; and the caregiver and child must engage in mutually enjoyable interactions (Bowlby, 1969). Additionally, Bowlby observed that infants would go to extraordinary lengths to prevent separation from their parents, such as crying, refusing to be comforted, and waiting for the caregiver to return. He observed that these same expressions were common to many other mammals, and consequently argued that these negative responses to separation serve an evolutionary function. Because mammalian infants cannot feed or protect themselves, they are dependent upon the care and protection of adults for survival. Thus, those infants who were able to maintain proximity to an attachment figure were more likely to survive and reproduce.

Erikson: Trust vs. Mistrust

As previously discussed in chapter 1, Erikson formulated an eight stage theory of psychosocial development. Erikson was in

agreement on the importance of a secure base, arguing that the most important goal of infancy was the development of a basic sense of trust in one's caregivers. Consequently, the first stage, trust vs. mistrust, highlights the importance of attachment. Erikson maintained that the first year to year and a half of life involves the establishment of a sense of trust (Erikson, 1982). 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.

Problems establishing trust: Erikson (1982) believed that mistrust could contaminate all aspects of one's life and deprive the individual of love and fellowship with others. 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. Under these circumstances, we cannot assume that the parent is going to provide the child with a feeling of trust.

Mary Ainsworth and the Strange Situation Technique

Developmental psychologist Mary Ainsworth, a student of John Bowlby, continued studying the development of attachment in infants. Ainsworth and her colleagues created a laboratory test that measured an infant's attachment to his or her parent. The test is called **The Strange Situation Technique** because it is *conducted in a context that is unfamiliar to the child and therefore likely to heighten the child's need for his or her parent* (Ainsworth, 1979).

During the procedure, that lasts about 20 minutes, the parent and

the infant are first left alone, while the infant explores the room full of toys. Then a strange adult enters the room and talks for a minute to the parent, after which the parent leaves the room. The stranger stays with the infant for a few minutes, and then the parent again enters and the stranger leaves the room. During the entire session, a video camera records the child's behaviors, which are later coded by trained coders. The investigators were especially interested in how the child responded to the caregiver leaving and returning to the room, referred to as the "reunion." On the basis of their behaviors, the children are categorized into one of four groups where each group reflects a different kind of attachment relationship with the caregiver. One style is secure and the other three styles are referred to as insecure.

- A child with a **secure attachment style** usually explores freely while the caregiver is present and may engage with the stranger. The child will typically play with the toys and bring one to the caregiver to show and describe from time to time. The child may be upset when the caregiver departs, but is also happy to see the caregiver return.
- A child with an **ambivalent** (sometimes called resistant) **attachment style** is wary about the situation in general, particularly the stranger, and stays close or even clings to the caregiver rather than exploring the toys. When the caregiver leaves, the child is extremely distressed and is ambivalent when the caregiver returns. The child may rush to the caregiver, but then fails to be comforted when picked up. The child may still be angry and even resist attempts to be soothed.
- A child with an **avoidant attachment style** will avoid or ignore the mother, showing little emotion when the mother departs or returns. The child may run away from the mother when she approaches. The child will not explore very much, regardless of who is there, and the stranger will not be treated much differently from the mother.
- A child with a **disorganized/disoriented attachment style**

seems to have an inconsistent way of coping with the stress of the strange situation. The child may cry during the separation, but avoid the mother when she returns, or the child may approach the mother but then freeze or fall to the floor.

How common are the attachment styles among children in the United States? It is estimated that about 65 percent of children in the United States are securely attached. Twenty percent exhibit avoidant styles and 10 to 15 percent are ambivalent. Another 5 to 10 percent may be characterized as disorganized.



Figure 3.27: A child's attachment style.

Some cultural differences in attachment styles have been found (Rothbaum, Weisz, Pott, Miyake, & Morelli, 2010). For example, German parents value independence and Japanese mothers are typically by their children's sides. As a result, the rate of insecure-avoidant attachments is higher in Germany and insecure-resistant attachments are higher in Japan. These differences reflect cultural variation rather than true insecurity, however (van Ijzendoorn and Sagi, 1999).

Keep in mind that methods for measuring attachment styles have been based on a model that reflects middle-class, U. S. values and interpretation. Newer methods for assessment attachment styles involve using a **Q-sort technique** *in which a large number of behaviors are recorded on cards and the observer sorts the cards in a*

way that reflects the type of behavior that occurs within the situation (Waters, 1987). There are 90 items in the third version of the Q-sort technique, and examples of the behaviors assessed include:

- When child returns to mother after playing, the child is sometimes fussy for no clear reason.
- When the child is upset or injured, the child will accept comforting from adults other than mother.
- Child often hugs or cuddles against mother, without her asking or inviting the child to do so
- When the child is upset by mother's leaving, the child continues to cry or even gets angry after she is gone.

At least two researchers observe the child and parent in the home for 1.5-2 hours per visit. Usually two visits are sufficient to gather adequate information. The parent is asked if the behaviors observed are typical for the child. This information is used to test the validity of the Strange Situation classifications across age, cultures, and with clinical populations.

Caregiver Interactions and the Formation of Attachment: Most developmental psychologists argue that a child becomes **securely attached** when there is consistent contact from one or more caregivers who meet the physical and emotional needs of the child in a responsive and appropriate manner. However, even in cultures where mothers do not talk, cuddle, and play with their infants, secure attachments can develop (LeVine et. al., 1994).

The **insecure ambivalent style** occurs when the parent is insensitive and responds inconsistently to the child's needs. Consequently, the infant is never sure that the world is a trustworthy place or that he or she can rely on others without some anxiety. A caregiver who is unavailable, perhaps because of marital tension, substance abuse, or preoccupation with work, may send a message to the infant he or she cannot rely on having needs met. An infant who receives only sporadic attention when experiencing discomfort may not learn how to calm down. The child may cry if

separated from the caregiver and also cry upon their return. They seek constant reassurance that never seems to satisfy their doubt. Keep in mind that clingy behavior can also just be part of a child's natural disposition or temperament and does not necessarily reflect some kind of parental neglect. Additionally, a caregiver that attends to a child's frustration can help teach them to be calm and to relax.

The **insecure avoidant style** is marked by insecurity, but this style is also characterized by a tendency to avoid contact with the caregiver and with others. This child may have learned that needs typically go unmet and learns that the caregiver does not provide care and cannot be relied upon for comfort, even sporadically. An insecure avoidant child learns to be more independent and disengaged.

The **insecure disorganized/disoriented style** represents the most insecure style of attachment and occurs when the child is given mixed, confused, and inappropriate responses from the caregiver. For example, a mother who suffers from schizophrenia may laugh when a child is hurting or cry when a child exhibits joy. The child does not learn how to interpret emotions or to connect with the unpredictable caregiver. This type of attachment is also often seen in children who have been abused. Research has shown that abuse disrupts a child's ability to regulate their emotions (Main & Solomon, 1990).



Figure 3.28: A woman holding two babies.

Caregiver Consistency: Having a consistent caregiver may be jeopardized if the infant is cared for in a day care setting with a high turn-over of staff or if institutionalized and given little more than basic physical care. Infants who, perhaps because of being in orphanages with inadequate care, have not had the opportunity to attach in infancy may still form initial secure attachments several years later. However, they may have more emotional problems of depression, anger, or be overly friendly as they interact with others (O'Connor et. al., 2003).

Social Deprivation: Severe deprivation of parental attachment can lead to serious problems. According to studies of children who have not been given warm, nurturing care, they may show developmental delays, failure to thrive, and attachment disorders (Bowlby, 1982). **Non-organic failure to thrive** is the *diagnosis for an infant who does not grow, develop, or gain weight on schedule*. In addition, postpartum depression can cause even a well-intentioned mother to neglect her infant.

Reactive Attachment Disorder: Children who experience social neglect or deprivation, repeatedly change primary caregivers that limit opportunities to form stable attachments, or are reared in unusual settings (such as institutions) that limit opportunities to form stable attachments can certainly have difficulty forming attachments. According to the Diagnostic and Statistical

Manual of Mental Disorders, 5th edition (American Psychiatric Association, 2013), *those children experiencing neglectful situations and also displaying markedly disturbed and developmentally inappropriate attachment behavior, such as being inhibited and withdrawn, minimal social and emotional responsiveness to others, and limited positive affect, may be diagnosed with* **Reactive Attachment Disorder.** This disorder often occurs with developmental delays, especially in cognitive and language areas. Fortunately, the majority of severely neglected children do not develop Reactive Attachment Disorder, which occurs in less than 10% of such children. The quality of the caregiving environment after serious neglect affects the development of this disorder.

Resiliency: *Being able to overcome challenges and successfully adapt* is **Resiliency.** Even young children can exhibit strong resiliency to harsh circumstances. Resiliency can be attributed to certain personality factors, such as an easy-going temperament. Some children are warm, friendly, and responsive, whereas others tend to be more irritable, less manageable, and difficult to console, and these differences play a role in attachment (Gillath, Shaver, Baek, & Chun, 2008; Seifer, Schiller, Sameroff, Resnick, & Riordan, 1996). It seems safe to say that attachment, like most other developmental processes, is affected by an interplay of genetic and socialization influences.

Receiving support from others also leads to resiliency. 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. In a direct test of this idea, Dutch researcher van den Boom (1994) randomly assigned some babies' mothers to a training session in which they learned to better respond to their children's needs. The research found that these mothers' babies were more likely to show a secure attachment style in comparison to the mothers in a control group that did not receive training.

3.11: Erikson - 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 (1982) 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.

3.12: Measuring Infant Development

The Bayley Scales of Infant and Toddler Development, Third Edition (Bayley-III) comprehensively assess children within the age range of 1 to 42 months (Pearson Education, 2016). Children are evaluated in five key developmental domains, including cognition, language, social-emotional, motor, and adaptive behavior. By identifying developmental delays in the very young, the Bayley Scales can highlight which early intervention techniques might be most beneficial. Detailed information is even able to be obtained from non-verbal children.

3.13: 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.

3.14: Canadian Resources

Below are resources that provide the Canadian context related to infancy and toddlerhood.

- Statistics Canada. (2021). *Family Matters: Parental leaves in Canada* [Infographic]. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2020048-eng.htm

3:15: Test your knowledge



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4: EARLY CHILDHOOD

Learning Objectives: Physical Development in Early Childhood

- Summarize the overall physical growth
- Describe the changes in brain maturation
- Describe the changes in sleep
- Summarize the changes in gross and motor skills
- Describe when a child is ready for toilet training
- Describe sexual development
- Identify nutritional concerns

Our discussion will now focus on the physical, cognitive and socioemotional development during the ages from two to six, referred to as early childhood. Early childhood represents a time period of continued rapid growth, especially in the areas of language and cognitive development. Those in early childhood have more control over their emotions and begin to pursue a variety of activities that reflect their personal interests. Parents continue to be very important in the child's development, but now teachers and peers exert an influence not seen with infants and toddlers.

4.1: Prelude to Early Childhood

Overall Physical Growth: Children between the ages of two and six years tend to grow about 3 inches in height and gain about 4 to 5 pounds in weight each year. Just as in infancy, growth occurs in spurts rather than continually. According to the Centers for Disease Control and Prevention (2000) the average 2 year-old weighs between 23 and 28 pounds and stands between 33 and 35 inches tall. The average 6 year-old weighs between 40 and 50 pounds and is about 44 to 47 inches in height. The 3 year-old is still very similar to a toddler with a large head, large stomach, short arms and legs. By the time the child reaches age 6, however, the torso has lengthened and body proportions have become more like those of adults.



Figure 4.1: Physical growth of children.

This growth rate is slower than that of infancy and is accompanied by a reduced appetite between the ages of 2 and 6. This change can sometimes be surprising to parents and lead to the development of poor eating habits. However, children between the ages of 2 and 3 need 1,000 to 1,400 calories, while children between the ages of 4 and 8 need 1,200 to 2,000 calories (Mayo Clinic, 2016a).

4.2: Brain Maturation

Brain weight: The brain is about 75 percent its adult weight by three years of age. By age 6, it is at 95 percent its adult weight (Lenroot & Giedd, 2006). Myelination and the development of dendrites continue 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 attention and emotion, makes it increasingly possible to inhibit emotional outbursts and understand how to play games. Understanding the game, thinking ahead, and coordinating movement improve with practice and myelination.

Growth in the Hemispheres and Corpus Callosum: Between ages 3 and 6, the left hemisphere of the brain grows dramatically. This side of the brain or hemisphere is typically involved in language skills. The right hemisphere continues to grow throughout early childhood and is involved in tasks that require spatial skills, such as recognizing shapes and patterns. The **Corpus Callosum,** *a dense band of fibers that connects the two hemispheres of the brain*, contains approximately 200 million nerve fibers that connect the hemispheres (Kolb & Whishaw, 2011). The corpus callosum is illustrated in Figure 4.2.

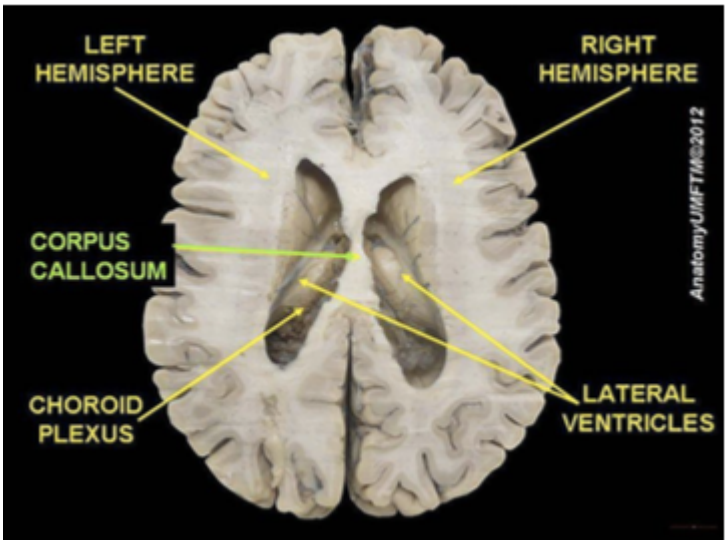


Figure 4.2: Corpus Callosum.

The corpus callosum is located a couple of inches below the longitudinal fissure, which runs the length of the brain and separates the two cerebral hemispheres (Garrett, 2015). Because the two hemispheres carry out different functions, they communicate with each other and integrate their activities through the corpus callosum. Additionally, because incoming information is directed toward one hemisphere, such as visual information from the left eye being directed to the right hemisphere, the corpus callosum shares this information with the other hemisphere.

The corpus callosum undergoes a growth spurt between ages 3 and 6, and this results in improved coordination between right and left hemisphere tasks. For example, in comparison to other individuals, children younger than 6 demonstrate difficulty coordinating an Etch A Sketch toy because their corpus callosum is not developed enough to integrate the movements of both hands (Kalat, 2016).

Neuroplasticity: The control of some specific bodily functions, such as movement, vision, and hearing, is performed in specified areas of the cortex, and if these areas are damaged, the individual

will likely lose the ability to perform the corresponding function. For instance, if an infant suffers damage to facial recognition areas in the temporal lobe, it is likely that he or she will never be able to recognize faces (Farah, Rabinowitz, Quinn, & Liu, 2000). On the other hand, the brain is not divided up in an entirely rigid way. The brain's neurons have a remarkable capacity to reorganize and extend themselves to carry out particular functions in response to the needs of the organism, and to repair damage. As a result, the brain constantly creates new neural communication routes and rewires existing ones. **Neuroplasticity** refers to *the brain's ability to change its structure and function in response to experience or damage*. Neuroplasticity enables us to learn and remember new things and adjust to new experiences. Our brains are the most "plastic" when we are young children, as it is during this time that we learn the most about our environment. On the other hand, neuroplasticity continues to be observed even in adults (Kolb & Fantie, 1989).

4.3: Motor Skill Development

Early childhood is the time period when most children acquire the basic skills for locomotion, such as running, jumping, and skipping, and object control skills, such as throwing, catching, and kicking (Clark, 1994). Children continue to improve their gross motor skills as they run and jump. Fine motor skills are also being refined in activities, such as pouring water into a container, drawing, coloring, and buttoning coats and using scissors. Table 4.1 highlights some of the changes in motor skills during early childhood between 2 and 5 years of age. The development of greater coordination of muscles groups and finer precision can be seen during this time period. Thus, average 2-year-olds may be able to run with slightly better coordination than they managed as a toddler, yet they would have difficulty peddling a tricycle, something the typical 3-year-old can do. We see similar changes in fine motor skills with 4-year-olds who no longer struggle to put on their clothes, something they may have had problems with two years earlier. Motor skills continue to develop into middle childhood, but for those in early childhood, play that deliberately involves these skills is emphasized.

***Table* 4.1: Changes in Gross and Fine Motor Skills in Early Childhood.**
Source: NIH: US National Library of Medicine.

	Gross Motor Skills	**Fine Motor Skills**
Age 2	• Can kick a ball without losing balance • Can pick up objects while standing, without losing balance (*This often occurs by 15 months. It is a cause for concern if not seen by 2 years.*) • Can run with better coordination (*May still have a wide stance.*)	• Able to turn a door knob • Can look through a book, turning one page at a time • Can build a tower of 6 to 7 cubes • Able to put on simple clothes without help. (*The child is often better at removing clothes than putting them on.*)
Age 3	• Can briefly balance and hop on one foot • May walk up stairs with alternating feet (without holding the rail) • Can pedal a tricycle	• Can build a block tower of more than nine cubes • Can easily place small objects in a small opening • Can copy a circle • Drawing a person with 3 parts • Feeds self easily
Age 4	• Shows improved balance • Hops on 1 foot without losing balance • Throws a ball overhand with coordination	• Can cut out a picture using scissors • Drawing a square • Managing a spoon and fork neatly while eating • Putting on clothes properly
Age 5	• Has better coordination (getting the arms, legs, and body to work together) • Skips, jumps, and hops with good balance • Stays balanced while standing on one foot with eyes closed	• Shows more skill with simple tools and writing utensils • Can copy a triangle • Can use a knife to spread soft foods

Children's Art: Children's art highlights many developmental

changes. Rhoda Kellogg (1969) noted that children's drawings underwent several transformations. Starting with about 20 different types of scribbles at age 2, children move on to experimenting with the placement of scribbles on the page. By age 3 they are using the basic structure of scribbles to create shapes and are beginning to combine these shapes to create more complex images. By 4 or 5 children are creating images that are more recognizable representations of the world. These changes are a function of improvement in motor skills, perceptual development, and cognitive understanding of the world (Cote & Golbeck, 2007).

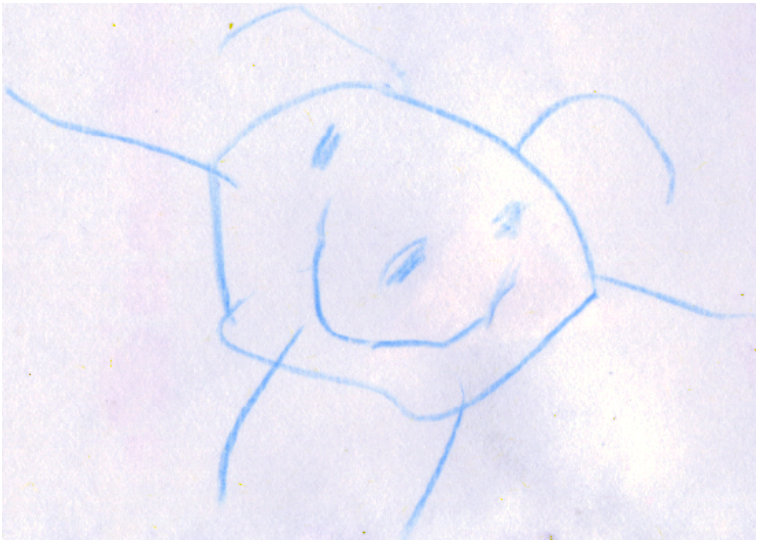


Figure 4.3: Children's drawing of tadpoles.

The drawing of tadpoles (see Figure: 4.3) is a pervasive feature of young children's drawings of self and others. Tadpoles emerge in children's drawing at about the age of 3 and have been observed in the drawings of young children around the world (Gernhardt, Rubeling & Keller, 2015). Despite the universality of tadpoles in children's drawings, there are cultural variations in the size, number of facial features, and emotional expressions displayed. Gernhardt et al. (2015) found that children from Western contexts (i.e., urban

areas of Germany and Sweden) and urban educated non-Western contexts (i.e., urban areas of Turkey, Costa Rica and Estonia) drew larger images, with more facial detail and more positive emotional expressions, while those from non-Western rural contexts (i.e., rural areas of Cameroon and India) depicted themselves as smaller, with less facial details and a more neutral emotional expression. The authors suggest that cultural norms of non-Western traditionally rural cultures, which emphasize the social group rather than the individual, may be one of the factors for the difference in the size of the figure. The tadpole figures of children from Western cultures often took up most of the page. Coming from cultures that emphasize the individual, this should not be surprising.

4.4: Toilet Training

Toilet training typically occurs during the first two years of early childhood (24-36 months). Some children show interest by age 2, but others may not be ready until months later. The average age for girls to be toilet trained is 29 months and for boys it is 31 months, and 98% of children are trained by 36 months (Boyse & Fitzgerald, 2010). The child's age is not as important as his/her physical and emotional readiness. If started too early, it might take longer to train a child. According to The Mayo Clinic (2016b) the following questions can help parents determine if a child is ready for toilet training:

- Does your child seem interested in the potty chair or toilet, or in wearing underwear?
- Can your child understand and follow basic directions?
- Does your child tell you through words, facial expressions or posture when he or she needs to go?
- Does your child stay dry for periods of two hours or longer during the day?
- Does your child complain about wet or dirty diapers?
- Can your child pull down his or her pants and pull them up again?
- Can your child sit on and rise from a potty chair? (p. 1)

If a child resists being trained or it is not successful after a few weeks, it is best to take a break and try again later. Most children master daytime bladder control first, typically within two to three months of consistent toilet training. However, nap and nighttime training might take months or even years.



Figure 4.4: Toilet training.

Some children experience elimination disorders that may require intervention by the child's pediatrician or a trained mental health practitioner. Elimination disorders include: **Enuresis**, or *the repeated voiding of urine into bed or clothes* (involuntary or intentional) and **Encopresis,** *the repeated passage of feces into inappropriate places* (involuntary or intentional) (American Psychiatric Association, 2013). The prevalence of enuresis is 5%-10% for 5 year-olds, 3%-5% for 10 year-olds and approximately 1% for those 15 years of age or older. Around 1% of 5 year- olds have encopresis, and it is more common in males than females.

4.5: Sleep

During early childhood, there is wide variation in the number of hours of hours of sleep recommended per day. For example, two year-olds may still need 15-16 hours per day, while a six year-old may only need 7-8 hours. The National Sleep Foundation's 2015 recommendations based on age are listed in Figure 4.5.

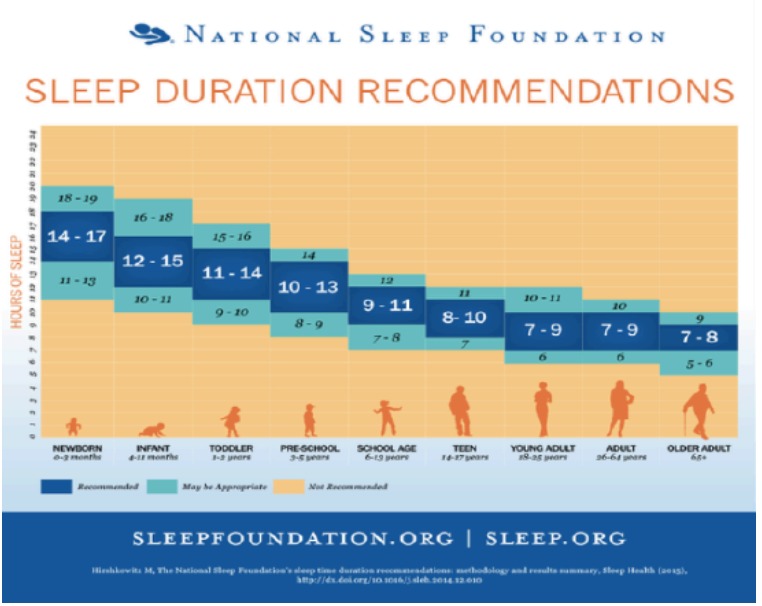


Figure 4.5: National Sleep Foundation's sleep duration recommendations.

4.6: Sexual Development

Historically, children have been thought of as innocent or incapable of sexual arousal (Aries, 1962). Yet, the physical dimension of sexual arousal is present from birth. However, to associate the elements of seduction, power, love, or lust that is part of the adult meanings of sexuality would be inappropriate. Sexuality begins in childhood as a response to physical states and sensation and cannot be interpreted as similar to that of adults in any way (Carroll, 2007).

Infancy: Boys and girls are capable of erections and vaginal lubrication even before birth (Martinson, 1981). Arousal can signal overall physical contentment and stimulation that accompanies feeding or warmth. Infants begin to explore their bodies and touch their genitals as soon as they have the sufficient motor skills. This stimulation is for comfort or to relieve tension rather than to reach orgasm (Carroll, 2007).

Early Childhood: Self-stimulation is common in early childhood for both boys and girls. Curiosity about the body and about others' bodies is a natural part of early childhood as well. As children grow, they are more likely to show their genitals to siblings or peers, and to take off their clothes and touch each other (Okami, Olmstead, & Abramson, 1997). Masturbation is common for both boys and girls. Boys are often shown by other boys how to masturbate, but girls tend to find out accidentally. Additionally, boys masturbate more often and touch themselves more openly than do girls (Schwartz, 1999).

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

4.7: Nutritional Concerns

In addition to those in early childhood having a smaller appetite, their parents may notice a general reticence to try new foods, or a preference for certain foods, often served or eaten in a particular way. Some of these changes can be traced back to the "just right" (or just-so) phenomenon that is common in early childhood. Many young children desire consistency and may be upset if there are even slight changes to their daily routines. They may like to line up their toys or other objects, or place them in symmetric patterns. They may arrange the objects until they feel "just right". Many young children have a set bedtime ritual and a strong preference for certain clothes, toys or games. All these tendencies tend to wane as children approach middle childhood, and the familiarity of such ritualistic behaviors seem to bring a sense of security and general reduction in childhood fears and anxiety (Evans, Gray, & Leckman, 1999; Evans & Leckman, 2015).

Malnutrition is not common in developed nations like the United States, yet many children lack a balanced diet. Added sugars and solid fats contribute to 40% of daily calories for children and teens in the US. Approximately half of these empty calories come from six sources: soda, fruit drinks, dairy desserts, grain desserts, pizza, and whole milk (CDC, 2015). Caregivers 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 subtler flavors such as fruits and vegetables. Consider the following advice about establishing eating patterns for years to come (Rice, 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

- **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 at a particular meal.
- **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.
- **No short order chefs.** While it is fine to prepare foods that children enjoy, preparing a different meal for each child or family member sets up an unrealistic expectation from others. Children probably do best when they are hungry and a meal is ready. Limiting snacks rather than allowing children to "graze" can help create an appetite for what is being served.
- **Limit choices.** If you give your young 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 ask for something that is not available or appropriate.
- **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 costlier and less profitable. However, preparing fresh food at home is not costly. It does, however, require more activity. Preparing meals and including the children in kitchen chores can provide a fun and memorable experience.
- **Don't bribe.** Bribing a child to eat vegetables by promising desert is not a good idea. 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). In addition, bribery 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. Most important is not to force your child to eat or fight over eating food.

4.8: Cognitive Development in Early Childhood

Learning Objectives: Cognitive Development in Early Childhood

- Describe Piaget's preoperational stage and the characteristics of preoperational thought
- Summarize the challenges to Piaget's theory
- Describe Vygotsky's theory of cognitive development
- Describe Information processing research on attention and memory
- Describe the views of the neo-Piagetians
- Describe theory-theory and the development of theory of mind
- Describe the developmental changes in language
- Describe the various types of early childhood education
- Describe the characteristics of autis

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, they begin learning basic principles about how the world works. Concepts such as tomorrow, time, size, distance and fact vs. fiction are not easy to grasp at this age, but these tasks are all part of cognitive development during early childhood.

Piaget's Preoperational Stage of Cognitive Development

Piaget's stage that coincides with early childhood is the **Preoperational Stage**. According to Piaget, this stage occurs from

the age of 2 to 7 years. In the preoperational stage, *children 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 she 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 *pre*-operational. Children's logic is based on their own personal knowledge of the world so far, rather than on conventional knowledge.

The preoperational period is divided into two stages: The **Symbolic Function Substage** occurs between 2 and 4 years of age and *is characterized by the child being able to mentally represent an object that is not present and a dependence on perception in problem solving.* The **Intuitive Thought Substage,** lasting from 4 to 7 years, *is marked by greater dependence on intuitive thinking rather than just perception* (Thomas, 1979). At this stage, children ask many questions as they attempt to understand the world around them using immature reasoning. Let's examine some of Piaget's assertions about children's cognitive abilities at this age.



Figure 4.6: Pretend Play.

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 queen of a faraway land. Piaget believed that children's pretend play helped children solidify new schemata 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 not to be able to take the perspective of others, and instead the child thinks that everyone sees, thinks, and feels just as they do.* An egocentric child is not able to infer the perspective of other people and instead attributes his own perspective to situations. For example, ten year-old Keiko's birthday is coming up, so her mom takes 3 year-old 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.

Piaget's classic experiment on egocentrism involved showing children a three dimensional model of a mountain and asking them to describe what a doll that is looking at the mountain from a different angle might see (see Figure 4.7).



Figure 4.7: "What does Dolly see?"

Children tend to choose a picture that represents their own, rather than the doll's view. By age 7 children are less self-centered. However, even younger children when speaking to others 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.

Conservation Errors: Conservation *refers to the ability to recognize that moving or rearranging matter does not change the quantity.* Let's look at Kenny and Keiko again. Dad gave a slice of pizza to 10-year-old Keiko and another slice to 3-year-old Kenny. Kenny's pizza slice was cut into five pieces, so Kenny told his sister that he got more pizza than she did. Kenny did not understand that cutting the pizza into smaller pieces did not increase the overall amount. This was because Kenny exhibited **Centration,** or *focused on only one characteristic of an object to the exclusion of others.* Kenny focused on the five pieces of pizza to his sister's one piece

even though the total amount was the same. Keiko was able to consider several characteristics of an object than just one. Because children have not developed this understanding of conservation, they cannot perform mental operations.

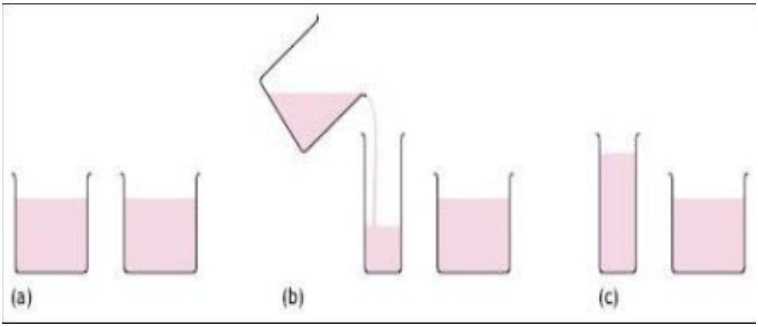


Figure 4.8: Conservation of Liquid. Does pouring liquid in a tall, narrow container make it have more?

The classic Piagetian experiment associated with conservation involves liquid (Crain, 2005). As seen in Figure 4.8, the child is shown two glasses (as shown in a) which are filled to the same level and asked if they have the same amount. Usually the child agrees they have the same amount. The experimenter then pours the liquid in one glass to a taller and thinner glass (as shown in b). The child is again asked if the two glasses have the same amount of liquid. The preoperational child will typically say the taller glass now has more liquid because it is taller (as shown in c). The child has concentrated on the height of the glass and fails to conserve.

Classification Errors: Preoperational children have difficulty understanding that an object can be classified in more than one way. For example, if shown three white buttons and four black buttons and asked whether there are more black buttons or buttons, the child is likely to respond that there are more black buttons. They do not consider the general class of buttons. Because children lack these general classes, their reasoning is typically **Transductive**, that is, *making faulty inferences from one specific example to another.* For example, Piaget's daughter Lucienne stated she had not had her

nap, therefore it was not afternoon. She did not understand that afternoons are a time period and her nap was just one of many event that occurred in the afternoon (Crain, 2005). As the child's vocabulary improves and more schemata are developed, the ability to classify objects improves.

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. 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 three, they seldom refer to objects as being alive (Berk, 2007).

Critique of Piaget: Similar to the critique of the sensorimotor period, several psychologists have attempted to show that Piaget also underestimated the intellectual capabilities of the reoperational child. For example, children's specific experiences can influence when they are able to conserve. Children of pottery makers in Mexican villages know that reshaping clay does not change the amount of clay at much younger ages than children who do not have similar experiences (Price-Williams, Gordon, & Ramirez, 1969). Crain (2005) indicated that preoperational children can think rationally on mathematical and scientific tasks, and they are not as egocentric as Piaget implied. Research on Theory of Mind (discussed later in the chapter) has demonstrated that children overcome egocentrism by 4 or 5 years of age, which is sooner than Piaget indicated.

4.9: Vygotsky's Sociocultural Theory of Cognitive Development

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 4.9: Lev Vygotsky.

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).



Figure 4.10: Children talk to themselves to better problem solve.

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. Who is correct? Both theories certainly contribute to our understanding of how children learn.

4.10: Information Processing

Information processing researchers have focused on several issues in cognitive development for this age group, including improvements in attention skills, changes in the capacity and the emergence of executive functions in working memory. Additionally, in early childhood memory strategies, memory accuracy, and autobiographical memory emerge. Early childhood is seen by many researchers as a crucial time period in memory development (Posner & Rothbart, 2007).

4.11: Attention

Changes in attention have been described by many as the key to changes in human memory (Nelson & Fivush, 2004; Posner & Rothbart, 2007). However, attention is not a unified function; it is comprised of sub-processes. *The ability to switch our focus between tasks or external stimuli* is called **divided attention** or **multitasking.** This is separate from *our ability to focus on a single task or stimulus, while ignoring distracting information*, called **selective attention**. Different from these is **sustained attention**, or *the ability to stay on task for long periods of time*. Moreover, we also have attention processes that influence our behavior and enable us to inhibit a habitual or dominant response, and others that enable us to distract ourselves when upset or frustrated.



Figure 4.11: These children will experience difficulty focusing on anything except playing.

Divided Attention: Young children (age 3-4) have considerable difficulties in dividing their attention between two tasks, and often perform at levels equivalent to our closest relative, the chimpanzee, but by age five they have surpassed the chimp (Hermann, Misch, Hernandez-Lloreda & Tomasello, 2015; Hermann & Tomasello, 2015). Despite these improvements, 5-year-olds continue to perform below the level of school-age children, adolescents, and adults.

Selective Attention: Children's ability with selective attention tasks improve as they age. However, this ability is also greatly influenced by the child's temperament (Rothbart & Rueda, 2005), the complexity of the stimulus or task (Porporino, Shore, Iarocci & Burack, 2004), and along with whether the stimuli are visual or auditory (Guy, Rogers & Cornish, 2013). Guy et al. (2013) found that children's ability to selectively attend to visual information outpaced that of auditory stimuli. This may explain why young children are not able to hear the voice of the teacher over the cacophony of sounds in the typical preschool classroom (Jones, Moore & Amitay, 2015). Jones and his colleagues found that 4 to 7 year-olds could not filter out background noise, especially when its frequencies were close in sound to the target sound. In comparison, 8 to 11 year-old older children often performed similar to adults.

Sustained Attention: Most measures of sustained attention typically ask children to spend several minutes focusing on one task, while waiting for an infrequent event, while there are multiple distractors for several minutes. Berwid, Curko-Kera, Marks & Halperin (2005) asked children between the ages of 3 and 7 to push a button whenever a "target" image was displayed, but they had to refrain from pushing the button when a non-target image was shown. The younger the child, the more difficulty he or she had maintaining their attention.

4.12: Memory

Based on studies of adults, people with amnesia, and neurological research on memory, researchers have proposed several "types" of memory (see Figure 4.12). **Sensory memory** (also called the *sensory register*) is *the first stage of the memory system, and it stores sensory input in its raw form for a very brief duration; essentially long enough for the brain to register and start processing the information.* Studies of auditory sensory memory have found that the sensory memory trace for the characteristics of a tone last about one second in 2 year-olds, two seconds in 3-year-olds, more than two seconds in 4-year-olds and three to five seconds in 6-year-olds (Glass, Sachse, & vob Suchodoletz, 2008). Other researchers have found that young children hold sounds for a shorter duration than do older children and adults, and that this deficit is not due to attentional differences between these age groups, but reflect differences in the performance of the sensory memory system (Gomes et al., 1999).

The second stage of the memory system is called *short-term* or **working memory**. Working memory is *the component of memory in which current conscious mental activity occurs.* Working memory often requires conscious effort and adequate use of attention to function effectively. As you read earlier, children in this age group struggle with many aspects of attention and this greatly diminishes their ability to consciously juggle several pieces of information in memory. The capacity of working memory, that is the amount of information someone can hold in consciousness, is smaller in young children than in older children and adults. The typical adult and teenager can hold a 7 digit number active in their short-term memory. The typical 5 year-old can hold only a 4 digit number active. This means that the more complex a mental task is, the less efficient a younger child will be in paying attention to, and actively processing, information in order to complete the task.

Changes in attention and the working memory system also

involve changes in executive function. **Executive function (EF)** *refers to self-regulatory processes*, such as the ability to inhibit a behavior or cognitive flexibility, *that enable adaptive responses to new situations or to reach a specific goal.* Executive function skills gradually emerge during early childhood and continue to develop throughout childhood and adolescence. Like many cognitive changes, brain maturation, especially the prefrontal cortex, along with experience influence the development of executive function skills. A child, whose parents are more warm and responsive, use scaffolding when the child is trying to solve a problem, and who provide cognitively stimulating environments for the child show higher executive function skills (Fay-Stammbach, Hawes & Meredith, 2014). For instance, scaffolding was positively correlated with greater cognitive flexibility at age two and inhibitory control at age four (Bibok, Carpendale & Müller, 2009).

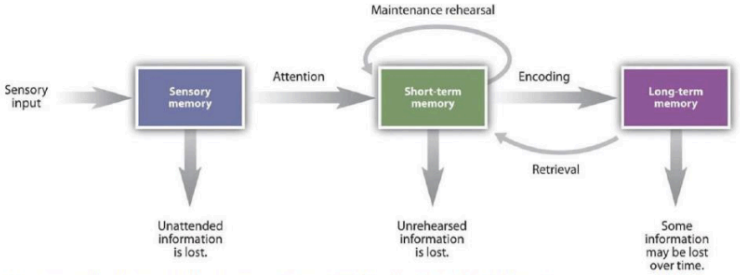


Figure 4.12: Memory can be characterized in terms of stages–the length of time that information remains available to us. Source: adapted from Atkinson, R. C., & Shiffrin, R. M. (1968). Human memory: A proposed system and its control processes. In K. Spence (Ed.) The psychology of learning and motivation (*Vol. 2*). *Oxford, England: Academic Press.*

Older children and adults use mental strategies to aid their memory performance. For instance, simple rote rehearsal may be used to commit information to memory. Young children often do not rehearse unless reminded to do so, and when they do rehearse, they often fail to use clustering rehearsal. In **clustering rehearsal,**

the person rehearses previous material while adding in additional information. If a list of words is read out loud to you, you are likely to rehearse each word as you hear it along with any previous words you were given. Young children will repeat each word they hear, but often fail to repeat the prior words in the list. In Schneider, Kron-Sperl and Hunnerkopf's (2009) longitudinal study of 102 kindergarten children, the majority of children used no strategy to remember information, a finding that was consistent with previous research. As a result, their memory performance was poor when compared to their abilities as they aged and started to use more effective memory strategies.



Figure 4.13: How long will these children remember their trip to Disneyland?

The third component in memory is **long-term memory**, *which is also known as permanent memory.* A basic division of long-term memory is between declarative and non-declarative memory. **Declarative memories**, sometimes referred to as **explicit memories**, *are memories for facts or events that we can consciously recollect.* **Non-declarative memories**, sometimes referred to as **implicit memories**, *are typically automated skills that do not require*

conscious recollection. Remembering that you have an exam next week would be an example of a declarative memory. In contrast, knowing how to walk so you can get to the classroom or how to hold a pencil to write would be examples of non-declarative memories. Declarative memory is further divided into semantic and episodic memory. **Semantic memories** *are memories for facts and knowledge that are not tied to a timeline*, while **episodic memories** *are tied to specific events in time*.

A component of episodic memory is **autobiographical memory,** *or our personal narrative*. As you may recall in Chapter 3 the concept of infantile amnesia was introduced. Adults rarely remember events from the first few years of life. In other words, we lack autobiographical memories from our experiences as an infant, toddler and very young preschooler. Several factors contribute to the emergence of autobiographical memory including brain maturation, improvements in language, opportunities to talk about experiences with parents and others, the development of theory of mind, and a representation of "self" (Nelson & Fivush, 2004). Two-year-olds do remember fragments of personal experiences, but these are rarely coherent accounts of past events (Nelson & Ross, 1980). Between 2 and 2 1/2 years of age children can provide more information about past experiences. However, these recollections require considerable prodding by adults (Nelson & Fivush, 2004). Over the next few years children will form more detailed autobiographical memories and engage in more reflection of the past.

4.13: Neo-Piagetians

As previously discussed, Piaget's theory has been criticized on many fronts, and updates to reflect more current research have been provided by the **Neo-Piagetians**, *or those theorists who provide "new" interpretations of Piaget's theory*. Morra, Gobbo, Marini and Sheese (2008) reviewed Neo-Piagetian theories, which were first presented in the 1970s, and identified how these "new" theories combined Piagetian concepts with those found in Information Processing. Similar to Piaget's theory, Neo-Piagetian theories believe in constructivism, assume cognitive development can be separated into different stages with qualitatively different characteristics, and advocate that children's thinking becomes more complex in advanced stages. Unlike Piaget, Neo-Piagetians believe that aspects of information processing change the complexity of each stage, not logic as determined by Piaget.

Neo-Piagetians propose that working memory capacity is affected by biological maturation, and therefore restricts young children's ability to acquire complex thinking and reasoning skills. Increases in working memory performance and cognitive skills development coincide with the timing of several neurodevelopmental processes. These include myelination, axonal and synaptic pruning, changes in cerebral metabolism, and changes in brain activity (Morra et al., 2008). Myelination especially occurs in waves between birth and adolescence, and the degree of myelination in particular areas explains the increasing efficiency of certain skills. Therefore, brain maturation, which occurs in spurts, affects how and when cognitive skills develop. Additionally, all Neo-Piagetian theories support that experience and learning interact with biological maturation in shaping cognitive development.

4.14: Children's Understanding of the World

Both Piaget and Vygotsky believed that children actively try to understand the world around them. More recently developmentalists have added to this understanding by examining how children organize information and develop their own theories about the world.



Figure 4.14: Children develop their own theories about the world.

Theory-Theory is *the tendency of children to generate theories to explain everything they encounter*. This concept implies that humans are naturally inclined to find reasons and generate explanations for why things occur. Children frequently ask question about what they see or hear around them. When the answers provided do not satisfy their curiosity or are too complicated for them to understand, they generate their own theories. In much the same way that scientists construct and revise their theories, children do the same with their intuitions about the world as they encounter new experiences

(Gopnik & Wellman, 2012). One of the theories they start to generate in early childhood centers on the mental states; both their own and those of others.

Theory of mind refers to *the ability to think about other people's thoughts*. This mental mind reading helps humans to understand and predict the reactions of others, thus playing a crucial role in social development. One common method for determining if a child has reached this mental milestone is the false belief task, described below.

The research began with a clever experiment by Wimmer and Perner (1983), who tested whether children can pass a false-belief test (see Figure 4.15).

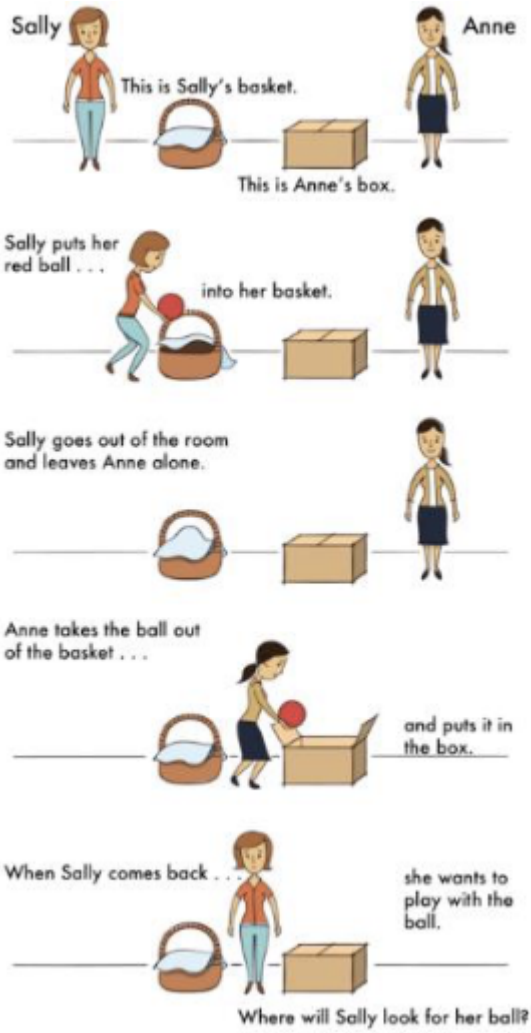


Figure 4.15: False-belief test.

The child is shown a picture story of Sally, who puts her ball in a basket and leaves the room. While Sally is out of the room, Anne comes along and takes the ball from the basket and puts it inside a box. The child is then asked *where* Sally thinks the ball is located when she comes back to the room. Is she going to look first *in*

the box or *in the basket*? The right answer is that she will look in the basket, because that's where she put it and thinks it is; but we have to infer this *false belief* against our own better knowledge that the ball is in the box. This is very difficult for children before the age of four because of the cognitive effort it takes. Three-year-olds have difficulty distinguishing between what they once thought was true and what they now know to be true. They feel confident that what they know now is what they have always known (Birch & Bloom, 2003). Even adults need to think through this task (Epley, Morewedge, & Keysar, 2004). To be successful at solving this type of task the child must separate what he or she "knows" to be true from what someone else might "think" is true. In Piagetian terms, they must give up a tendency toward egocentrism. The child must also understand that what guides people's actions and responses are what they "believe" rather than what is reality. In other words, people can mistakenly believe things that are false and will act based on this false knowledge. Consequently, prior to age four children are rarely successful at solving such a task (Wellman, Cross & Watson, 2001).

Researchers examining the development of theory of mind have been concerned by the overemphasis on the mastery of false belief as the primary measure of whether a child has attained theory of mind. Wellman and his colleagues (Wellman, Fang, Liu, Zhu & Liu, 2006) suggest that theory of mind is comprised of a number of components, each with its own developmental timeline (see Table 4.2).

Component	
Diverse-desires	
Diverse-beliefs	
Knowledge access (knowledge/ignorance)	
False belief	
Hidden emotion	

Two-year-olds understand the diversity of desires, yet as noted earlier it is not until age four or five that children grasp false belief, and often not until middle childhood do they understand that people may hide how they really feel. In part, because children in early childhood have difficulty hiding how they really feel.

Those in early childhood in the US, Australia, and Germany develop theory of mind in the sequence outlined above. Yet, Chinese and Iranian preschoolers acquire knowledge access before diverse beliefs (Shahaeian, Peterson, Slaughter & Wellman, 2011). Shahaeian and colleagues suggested that cultural differences in child-rearing may account for this reversal. Parents in collectivistic cultures, such as China and Iran, emphasize conformity to the family and cultural values, greater respect for elders, and the acquisition of knowledge and academic skills more than they do autonomy and social skills (Frank, Plunkett & Otten, 2010). This could reduce the degree of familial conflict of opinions expressed in the family. In contrast, individualistic cultures encourage children to think for themselves and assert their own opinion, and this could increase the risk of conflict in beliefs being expressed by family members. As a result,

children in individualistic cultures would acquire insight into the question of diversity of belief earlier, while children in collectivistic cultures would acquire knowledge access earlier in the sequence. The role of conflict in aiding the development of theory of mind may account for the earlier age of onset of an understanding of false belief in children with siblings, especially older siblings (McAlister & Petersen, 2007; Perner, Ruffman & Leekman, 1994).

This awareness of the existence of theory of mind is part of social intelligence, such as recognizing 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 be empathic toward others. Moreover, this mind reading ability helps us to anticipate and predict people's actions. The awareness of the mental states of others is important for communication and social skills.

4.15: Language Development

Vocabulary growth: A child's vocabulary expands between the ages of two to six from about 200 words to over 10,000 words. This "vocabulary spurt" typically involves 10-20 new words per week and is accomplished through a process called **fast-mapping**. *Words are easily learned by making connections between new words and concepts already known.* The parts of speech that are learned depend on the language and what is emphasized. Children speaking verb-friendly languages, such as Chinese and Japanese, learn verbs more readily, while those speaking English tend to learn nouns more readily. However, those learning less verb-friendly languages, such as English, seem to need assistance in grammar to master the use of verbs (Imai et al., 2008).

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

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 two and three. They will soon learn new words such as "went" and "did" to be used in those situations.

The Impact of Training: Remember Vygotsky and the Zone of Proximal Development? 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? Say, 'I 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 scaffolding is one in which the guide provides needed assistance to the child as a new skill is learned.

4.16: Preschool

Providing universal preschool has become an important lobbying point for federal, state, and local leaders throughout our country. In his 2013 State of the Union address, President Obama called upon congress to provide high quality preschool for all children. He continued to support universal preschool in his legislative agenda, and in December 2014 the President convened state and local policymakers for the White House Summit on Early Education (White House Press Secretary, 2014). However, universal preschool covering all four-year olds in the country would require significant funding. Further, how effective preschools are in preparing children for elementary school, and what constitutes high quality preschool have been debated. To set criteria for designation as a high quality preschool, the National Association for the Education of Young Children (NAEYC) identifies 10 standards (NAEYC, 2016). These include:

- Positive relationships among all children and adults are promoted.
- A curriculum that supports learning and development in social, emotional, physical, language, and cognitive areas.
- Teaching approaches that are developmentally, culturally and linguistically appropriate.
- Assessment of children's progress to provide information on learning and development.
- The health and nutrition of children are promoted, while they are protected from illness and injury.
- Teachers possess the educational qualifications, knowledge, and commitment to promote children's learning.
- Collaborative relationships with families are established and maintained.
- Relationships with agencies and institutions in the children's communities are established to support the program's goals.

- The indoor and outdoor physical environments are safe and well-maintained.
- Leadership and management personnel are well qualified, effective, and maintain licensure status with the applicable state agency.

Parents should review preschool programs using the NAEYC criteria as a guide and template for asking questions that will assist them in choosing the best program for their child. Selecting the right preschool is also difficult because there are so many types of preschools available. Zachry (2013) identified Montessori, Waldorf, Reggio Emilia, High Scope, Parent Co-Ops and Bank Street as types of preschool programs that focus on children learning through discovery. Teachers act as guides and create activities based on the child's developmental level.

Head Start: For children who live in poverty, Head Start has been providing preschool education since 1965 when it was begun by President Lyndon Johnson as part of his war on poverty. It currently serves nearly one million children and annually costs approximately 7.5 billion dollars (United States Department of Health and Human Services, 2015). However, concerns about the effectiveness of Head Start have been ongoing since the program began. Armor (2015) reviewed existing research on Head Start and found there were no lasting gains, and the average child in Head Start had not learned more than children who did not receive preschool education.



Figure 4.16: Four Year Old Head Start Students.

A recent report dated July 2015 evaluating the effectiveness of Head Start comes from the What Works Clearinghouse. The What Works Clearinghouse identifies research that provides reliable evidence of the effectiveness of programs and practices in education, and is managed by the Institute of Education Services for the United States Department of Education. After reviewing 90 studies on the effectiveness of Head Start, only one study was deemed scientifically acceptable and this study showed disappointing results (Barshay, 2015). This study showed that 3 and 4 year-old children in Head Start received "potentially positive effects" on general reading achievement, but no noticeable effects on math achievement and social-emotional development.

Nonexperimental designs are a significant problem in determining the effectiveness of Head Start programs because a control group is needed to show group differences that would demonstrate educational benefits. Because of ethical reasons, low income children are usually provided with some type of pre-school programming in an alternative setting. Additionally, Head Start programs are different depending on the location, and these differences include the length of the day or qualification of the teachers. Lastly, testing young children is difficult and strongly dependent on their language skills and comfort level with an evaluator (Barshay, 2015).

4.17: Autism Spectrum Disorder

A greater discussion on disorders affecting children and special educational services to assist them will occur in chapter 5. However, because characteristics of Autism Spectrum Disorder must be present in the early developmental period, as established by the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (American Psychiatric Association (APA), 2013), this disorder will be presented here. So what exactly is an Autism Spectrum Disorder?

Autism spectrum disorder is probably the most misunderstood and puzzling of the neurodevelopmental disorders. Children with this disorder show signs of significant disturbances in three main areas: (a) deficits in social interaction, (b) deficits in communication, and (c) repetitive patterns of behavior or interests. These disturbances appear early in life and cause serious impairments in functioning (APA, 2013). The child with autism spectrum disorder might exhibit deficits in social interaction by not initiating conversations with other children or turning their head away when spoken to. These children do not make eye contact with others and seem to prefer playing alone rather than with others. In a certain sense, it is almost as though these individuals live in a personal and isolated social world others are simply not privy to or able to penetrate. Communication deficits can range from a complete lack of speech, to one word responses (e.g., saying "Yes" or "No" when replying to questions or statements that require additional elaboration), to echoed speech (e.g., parroting what another person says, either immediately or several hours or even days later), to difficulty maintaining a conversation because of an inability to reciprocate others' comments. These deficits can also include problems in using and understanding nonverbal cues (e.g., facial

expressions, gestures, and postures) that facilitate normal communication.

Repetitive patterns of behavior or interests can be exhibited a number of ways. The child might engage in stereotyped, repetitive movements (rocking, head-banging, or repeatedly dropping an object and then picking it up), or she might show great distress at small changes in routine or the environment. For example, the child might throw a temper tantrum if an object is not in its proper place or if a regularly-scheduled activity is rescheduled. In some cases, the person with autism spectrum disorder might show highly restricted and fixated interests that appear to be abnormal in their intensity. For instance, the child might learn and memorize every detail about something even though doing so serves no apparent purpose. Importantly, autism spectrum disorder is not the same thing as intellectual disability, although these two conditions can occur together. The DSM-5 specifies that the symptoms of autism spectrum disorder are not caused or explained by intellectual disability.



Figure 4.17: Dr. Temple Grandin, an advocate for individuals with autism.

The qualifier "spectrum" in autism spectrum disorder is used to indicate that individuals with the disorder can show a range, or spectrum, of symptoms that vary in their magnitude and severity:

Some severe, others less severe. The previous edition of the DSM included a diagnosis of Asperger's disorder, generally recognized as a less severe form of autistic disorder; individuals diagnosed with Asperger's disorder were described as having average or high intelligence and a strong vocabulary, but exhibiting impairments in social interaction and social communication, such as talking only about their special interests (Wing, Gould, & Gillberg, 2011). However, because research has failed to demonstrate that Asperger's disorder differs qualitatively from autistic disorder, the DSM-5 does not include it. Some individuals with autism spectrum disorder, particularly those with better language and intellectual skills, can live and work independently as adults. However, most do not because the symptoms remain sufficient to cause serious impairment in many realms of life (APA, 2013).

Currently, estimates indicate that nearly 1 in 88 children in the United States has autism spectrum disorder; the disorder is 5 times more common in boys (1 out of 54) than girls (1 out of 252) (CDC, 2012). Rates of autistic spectrum disorder have increased dramatically since the 1980s. For example, California saw an increase of 273% in reported cases from 1987 through 1998 (Byrd, 2002); between 2000 and 2008, the rate of autism diagnoses in the United States increased 78% (CDC, 2012). Although it is difficult to interpret this increase, it is possible that the rise in prevalence is the result of the broadening of the diagnosis, increased efforts to identify cases in the community, and greater awareness and acceptance of the diagnosis. In addition, mental health professionals are now more knowledgeable about autism spectrum disorder and are better equipped to make the diagnosis, even in subtle cases (Novella, 2008).

The exact causes of autism spectrum disorder remain unknown despite massive research efforts over the last two decades (Meek, Lemery-Chalfant, Jahromi, & Valiente, 2013). Autism appears to be strongly influenced by genetics, as identical twins show concordance rates of 60%– 90%, whereas concordance rates for fraternal twins and siblings are 5%–10% (Autism Genome Project

Consortium, 2007). Many different genes and gene mutations have been implicated in autism (Meek et al., 2013). Among the genes involved are those important in the formation of synaptic circuits that facilitate communication between different areas of the brain (Gauthier et al., 2011). A number of environmental factors are also thought to be associated with increased risk for autism spectrum disorder, at least in part, because they contribute to new mutations. These factors include exposure to pollutants, such as plant emissions and mercury, urban versus rural residence, and vitamin D deficiency (Kinney, Barch, Chayka, Napoleon, & Munir, 2009).

There is no scientific evidence that a link exists between autism and vaccinations (Hughes, 2007). Indeed, a recent study compared the vaccination histories of 256 children with autism spectrum disorder with that of 752 control children across three time periods during their first two years of life (birth to 3 months, birth to 7 months, and birth to 2 years) (DeStefano, Price, & Weintraub, 2013). At the time of the study, the children were between 6 and 13 years old, and their prior vaccination records were obtained. Because vaccines contain immunogens (substances that fight infections), the investigators examined medical records to see how many immunogens children received to determine if those children who received more immunogens were at greater risk for developing autism spectrum disorder. The results of this study clearly demonstrated that the quantity of immunogens from vaccines received during the first two years of life were not at all related to the development of autism spectrum disorder.

4.18: Psychosocial Development in Early Childhood

Learning Objectives: Psychosocial Development in Early Childhood

- Describe Erikson's third stage of initiative vs. guilt
- Describe the changes in self-concept and self-esteem
- Describe children's understanding of others
- Describe emotional regulation and delayed gratification
- Describe young children's understanding of morality
- Summarize the main theories of gender development
- Describe the major parenting styles and their consequences for children
- Describe the role of siblings in children's development
- Summarize the types of play in which children engage
- Describe the influence of the media on young children's social development

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 (Erikson, 1982). 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. Placing pictures of drawings on the refrigerator,

purchasing mud pies for dinner, and admiring towers of legos will facilitate the child's sense of initiative.

Self-Concept and 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. If asked to describe yourself to others you would likely provide some physical descriptors, group affiliation, personality traits, behavioral quirks, and important values and beliefs. When researchers ask young children the same open- ended question, the children provide physical descriptors, preferred activities, and favorite possessions. Thus, a three year-old might describe herself as a three years-old girl with red hair, who likes to play with legos. This *focus on external qualities* is referred to as the **categorical self**. 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"). Consistent with Harter and Pike's suspicions, those in early childhood 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 4.18: Children develop their self-concept in early childhood.

Young children tend to have a generally positive self-image. This optimism is often the result of a lack of social comparison when making self-evaluations (Ruble, Boggiano, Feldman, & Loeble, 1980), and with comparison between what the child once could do to what they can do now (Kemple, 1995). However, this does not mean that preschool children are exempt from negative self-evaluations. Preschool children with insecure attachments to their caregivers tend to have lower self-esteem at age four (Goodvin et al., 2008). Maternal negative affect was also found by Goodwin and her colleagues to produce more negative self-evaluations in preschool children.

Self-Control

Self-control is not a single phenomenon, but is multi-facetted. It includes **response initiation,** *the ability to not initiate a behavior before you have evaluated all of the information*, **response inhibition,** *the ability to stop a behavior that has already begun*, and **delayed gratification**, *the ability to hold out for a larger reward by forgoing a smaller immediate reward* (Dougherty, Marsh, Mathias, & Swann, 2005). It is in early childhood that we see the start of self-control, a process that takes many years to fully develop. In the now classic "Marshmallow Test" (Mischel, Ebbesen, & Zeiss, 1972) children are

confronted with the choice of a small immediate reward (a marshmallow) and a larger delayed reward (more marshmallows). Walter Mischel and his colleagues over the years have found that the ability to delay gratification at the age of four predicted better academic performance and health later in life (Mischel, et al., 2011). Self- control is related to executive function, discussed earlier in the chapter. As executive function improves, children become less impulsive (Traverso, Viterbori, & Usai, 2015).

4.19: Gender

Another important dimension of the self is the sense of self as male or female. Preschool aged children become increasingly interested in finding out the differences between boys and girls both physically and in terms of what activities are acceptable for each. While two year olds can identify some differences and learn whether they are boys or girls, preschoolers become more interested in what it means to be male or female. This *self-identification based on a continuum from male to female* is known as **Gender Identity**. The development of gender and gender identity appears to be due to an interaction among biological, social and representational influences (Ruble, Martin, & Berenbaum, 2006).

Gender Roles, *or the expectations associated with being male or female*, are learned in one's culture throughout childhood and into adulthood. Learning theorists suggest that gender role socialization is a result of the ways in which parents, teachers, friends, schools, religious institutions, media and others send messages about what is acceptable or desirable behavior as males or females. This socialization begins early-in fact, it may even begin the moment a parent learns that a child is on the way. Knowing the sex of the child can conjure up images of the child's behavior, appearance, and potential on the part of a parent, and this stereotyping continues to guide perception through life. Consider parents of newborns, shown a 7 pound, 20 inch baby, wrapped in blue (a color designating males) describe the child as tough, strong, and angry when crying. Shown the same infant in pink (a color used in the United States for baby girls), these parents are likely to describe the baby as pretty, delicate, and frustrated when crying (Maccoby & Jacklin, 1987). Female infants are held more, talked to more frequently and given direct eye contact, while male infants play is often mediated through a toy or activity. In addition to being recipients of these

cultural expectations, we are individuals who also modify these roles (Kimmel, 2008).

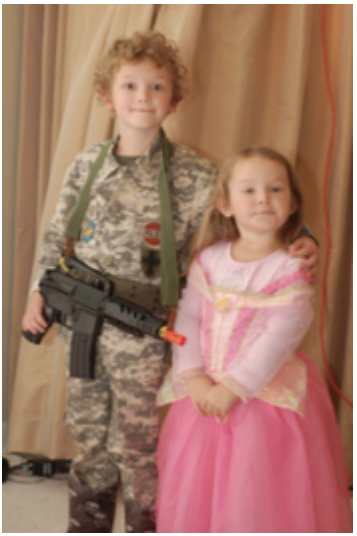


Figure 4.19: Gender roles.

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 & Sadker, 1994). Girls are given the message from teachers that they must try harder and endure in order to succeed while boys' successes are attributed to their intelligence. Of course, the stereotypes of advisors can also influence which kinds of courses or vocational choices girls and boys are encouraged to make.

Based on what young children learn about gender from parents, peers, and those who they observe in society, *children develop their*

own conceptions of the attributes associated with maleness or femaleness which is referred to as **Gender Schemas**. Friends discuss what is acceptable for boys and girls and popularity may be based on modeling what is considered ideal behavior or looks for the sexes. Girls tend to tell one another secrets to validate others as best friends while boys compete for position by emphasizing their knowledge, strength or accomplishments. This focus on accomplishments can even give rise to exaggerating accomplishments in boys, but girls are discouraged from showing off and may learn to minimize their accomplishments as a result.

Gender Dysphoria: A growing body of research is now focused on **Gender Dysphoria**, or *the distress accompanying a mismatch between one's gender identity and biological sex* (American Psychiatric Association, 2013). Although prevalence rates are low, at approximately 0.3 percent of the United States population (Russo, 2016), children who later identified as transgender, often stated that they were the opposite gender as soon as they began talking. Comments such as stating they prefer the toys, clothing and anatomy of the opposite sex, while rejecting the toys, clothing, and anatomy of their assigned sex are criteria for a diagnosis of Gender Dysphoria in children. Certainly many young children do not conform to the gender roles modeled by the culture and even push back against assigned roles. However, they do not experience discomfort regarding their gender identity and would not be identified with Gender Dysphoria. A more comprehensive description of Gender Dysphoria, including current treatments, will be discussed in the chapter on adolescence.

How much does gender matter? In the United States, gender differences are found in social interactions, media messages, and in school experiences. Even into college and professional school, females are less vocal in the classrooms and much more at risk for sexual harassment from teachers, coaches, classmates, and professors. The stereotypes that males should be strong, forceful, active, dominant, and rational and that females should be pretty, subordinate, unintelligent, emotional, and gabby are portrayed in

children's toys, books, commercials, video games, movies, television shows and music. In adulthood, these differences are reflected in income gaps between men and women. Women working full-time earn only about 74 percent the income of men. Additionally, women experience higher rates of rape, domestic violence, and eating disorders, while higher rates of violent death occur for men in young adulthood.

4.20: Parenting Styles

Relationships between parents and children continue to play a significant role in children's development during early childhood. As children mature, parent-child relationships naturally change. Preschool and grade-school children are more capable, have their own preferences, and sometimes refuse or seek to compromise with parental expectations. This can lead to greater parent-child conflict, and how conflict is managed by parents further shapes the quality of parent-child relationships.

Baumrind (1971) identified a model of parenting that focuses on the level of control/ expectations that parents have regarding their children and how warm/responsive they are. This model resulted in four parenting styles. In general, children develop greater competence and self-confidence when parents have high, but reasonable expectations for children's behavior, communicate well with them, are warm, loving and responsive, and use reasoning, rather than coercion as preferred responses to children's misbehavior. This kind of parenting style has been described as **Authoritative** (Baumrind, 2013). *Authoritative parents are supportive and show interest in their kids' activities, but are not overbearing and allow them to make constructive mistakes.* Parents allow negotiation where appropriate, and consequently this type of parenting is considered more democratic.



Figure 4.20: Authoritative Parenting.

Authoritarian *is the traditional model of parenting in which parents make the rules and children are expected to be obedient.* Baumrind suggests that authoritarian parents tend to place maturity demands on their children that are unreasonably high and tend to be aloof and
distant. Consequently, children reared in this way may fear rather than respect their parents and, because their parents do not allow discussion, may take out their frustrations on safer targets- perhaps as bullies toward peers.

Permissive *parenting involves holding expectations of children that are below what could be reasonably expected from them.* Children are allowed to make their own rules and determine their own activities. Parents are warm and communicative, but provide little structure for their children. Children fail to learn self-discipline and may feel somewhat insecure because they do not know the limits.

Uninvolved *parents are disengaged from their children. They do not make demands on their children and are non-responsive.* These children can suffer in school and in their relationships with their peers (Gecas & Self, 1991).

Keep in mind that most parents do not follow any model completely. Real people tend to fall somewhere in between these styles. Sometimes parenting styles change from one child to the next or in times when the parent has more or less time and energy for parenting. Parenting styles can also be affected by concerns the parent has in other areas of his or her life. For example, parenting styles tend to become more authoritarian when parents are tired and perhaps more authoritative when they are more energetic. Sometimes parents seem to change their parenting approach when others are around, maybe because they become more self-conscious as parents or are concerned with giving others the impression that they are a "tough" parent or an "easygoing" parent. Additionally, parenting styles may reflect the type of parenting

someone saw modeled while growing up. See Table 4.3 for Baumrind's parenting style descriptions.

		Expectations/Control	
		Low	High
Warmth/ Responsiveness	Low	uninvolved	authoritarian
	High	permissive	authoritative

Table 4.3: Comparison of Four Parenting Styles.

Culture: The impact of culture and class cannot be ignored when examining parenting styles. The model of parenting described above assumes that the authoritative style is the best because this style is 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. Authoritarian parenting has been used historically and reflects cultural need for children to do as they are told. African-American, Hispanic and Asian parents tend to be more authoritarian than non-Hispanic whites. In societies where family members' cooperation is necessary for survival, rearing children who are independent and who strive to be on their own makes no sense. But in an economy based on being mobile in order to find jobs and where one's earnings are based on education, raising a child to be independent is very important.

In a classic study on social class and parenting styles Kohn (1977) explains that parents tend to emphasize qualities that are needed for their own survival when parenting their children. Working class parents are rewarded for being obedient, reliable, and honest in

their jobs. They are not paid to be independent or to question the management; rather, they move up and are considered good employees if they show up on time, do their work as they are told, and can be counted on by their employers. Consequently, these parents reward honesty and obedience in their children. Middle class parents who work as professionals are rewarded for taking initiative, being self-directed, and assertive in their jobs. They are required to get the job done without being told exactly what to do. They are asked to be innovative and to work independently. These parents encourage their children to have those qualities as well by rewarding independence and self-reliance. Parenting styles can reflect many elements of culture.

Spanking

Spanking is often thought of as a rite of passage for children, and this method of discipline continues to be endorsed by the majority of parents (Smith, 2012). Just how effective is spanking, however, and are there any negative consequences? After reviewing the research, Smith (2012) states "many studies have shown that physical punishment, including spanking, hitting and other means of causing pain, can lead to increased aggression, antisocial behavior, physical injury and mental health problems for children" (p. 60). Gershoff, (2008) reviewed decades of research and recommended that parents and caregivers make every effort to avoid physical punishment and called for the banning of physical discipline in all U.S. schools.

In a longitudinal study that followed more than 1500 families from 20 U.S. cities, parents' reports of spanking were assessed at ages three and five (MacKenzie, Nicklas, Waldfogel, &

Brooks-Gunn, 2013). Measures of externalizing behavior and receptive vocabulary were assessed at age nine. Results indicated that those children who were spanked at least twice a week by

their mothers scored 2.66 points higher on a measure of aggression and rule-breaking than those who were never spanked. Additionally, those who were spanked less, still scored 1.17 points higher than those never spanked. When fathers did the spanking, those spanked at least two times per week scored 5.7 points lower on a vocabulary test than those never spanked. This study revealed the negative cognitive effects of spanking in addition to the increase in aggressive behavior.

Internationally, physical discipline is increasingly being viewed as a violation of children's human rights. Thirty countries have banned the use of physical punishment, and the United Nations Committee on the Rights of the Child (2014) called physical punishment "legalized violence against children" and advocated that physical punishment be eliminated in all settings.

Many alternatives to spanking are advocated by child development specialists and include:

- Praising and modeling appropriate behavior
- Providing time-outs for inappropriate behavior
- Giving choices
- Helping the child identify emotions and learning to calm down
- Ignoring small annoyances
- Withdrawing privileges

4.21: Sibling Relationships

Siblings spend a considerable amount of time with each other and offer a unique relationship that is not found with same-age peers or with adults. Siblings play an important role in the development of social skills. Cooperative and pretend play interactions between younger and older siblings can teach empathy, sharing, and cooperation (Pike, Coldwell, & Dunn, 2005), as well as, negotiation and conflict resolution (Abuhatoum & Howe, 2013). However, the quality of sibling relationships is often mediated by the quality of the parent-child relationship and the psychological adjustment of the child (Pike et al., 2005). For instance, more negative interactions between siblings have been reported in families where parents had poor patterns of communication with their children (Brody, Stoneman, & McCoy, 1994). Children who have emotional and behavioral problems are also more likely to have negative interactions with their siblings. However, the psychological adjustment of the child can sometimes be a reflection of the parent-child relationship. Thus, when examining the quality of sibling interactions, it is often difficult to tease out the separate effect of adjustment from the effect of the parent-child relationship.



Figure 4.21: Siblings can have conflictual and supportive relationships.

While parents want positive interactions between their children, conflicts are going to arise, and some confrontations can be the impetus for growth in children's social and cognitive skills. The sources of conflict between siblings often depend on their respective ages. Dunn and Munn (1987) revealed that over half of all sibling conflicts in early childhood were disputes about property rights. By middle childhood this starts shifting toward control over social situation, such as what games to play, disagreements about facts or opinions, or rude behavior (Howe, Rinaldi, Jennings, & Petrakos, 2002). Researchers have also found that the strategies children use to deal with conflict change with age, but that this is also tempered by the nature of the conflict.

Abuhatoum and Howe (2013) found that coercive strategies (e.g., threats) were preferred when the dispute centered on property rights, while reasoning was more likely to be used by older siblings and in disputes regarding control over the social situation. However,

younger siblings also use reasoning, frequently bringing up the concern of legitimacy (e.g., "You're not the boss") when in conflict with an older sibling. This is a very common strategy used by younger siblings and is possibly an adaptive strategy in order for younger siblings to assert their autonomy (Abuhatoum & Howe, 2013). A number of researchers have found that children who can use non-coercive strategies are more likely to have a successful resolution, whereby a compromise is reached and neither child feels slighted (Ram & Ross, 2008; Abuhatoum & Howe, 2013).

Not surprisingly, friendly relationships with siblings often lead to more positive interactions with peers. The reverse is also true. A child can also learn to get along with a sibling, with, as the song says "a little help from my friends" (Kramer & Gottman, 1992).

4.22: Play

Freud saw play as a means for children to release pent-up emotions and to deal with emotionally distressing situations in a more secure environment. Vygotsky and Piaget saw play as a way of children developing their intellectual abilities (Dyer & Moneta, 2006). All three theorists saw play as providing positive outcomes for children.



Figure 4.22: Which type of play are these two boys engaging in?

Mildred Parten (1932) observed two to five year-old children and noted six types of play. Three types she labeled as non-social (unoccupied, solitary, and onlooker) and three types were categorized as social play (parallel, associative, and cooperative). Table 4.4 describes each type of play. Younger children engage in non-social play more than those older; by age five associative and cooperative play are the most common forms of play (Dyer & Moneta, 2006).

Category	
Unoccupied Play	Children's be
Solitary Play	Children play by thems
Onlooker Play	Children are observing other ch
Parallel Play	Childr
Associative Play	Childre
Cooperative Play	Children are

Box 4.2: imaginary companions

An intriguing occurrence in early childhood is the emergence of imaginary companions. Researchers differ in how they define what qualifies as an imaginary companion. Some studies include only invisible characters that the child refers to in conversation, or plays with for an extended period of time. Other researchers also include objects that the child personifies, such as a stuffed toy or doll, or characters the child impersonates every day. Estimates of the number of children who have imaginary companions varies greatly (from as little as 6% to as high as 65%) depending on what is included in the definition (Gleason, Sebanc, & Hartup, 2000).



Figure 4.23: Imaginary companions.

Little is known about why children create imaginary companions, and more than half of all companions have no obvious trigger in the child's life (Masih, 1978). Imaginary companions are sometimes based on real people, characters from stories, or simply names the child has heard (Gleason, et. al., 2000). Imaginary companions often change over time. In their study, Gleason et al. (2000) found that 40% of the imaginary companions of the children they studied changed, such as developing superpowers, switching age, gender, or even dying, and 68% of the characteristics of the companion were acquired over time. This could reflect greater complexity in the child's "creation" over time and/or a greater willingness to talk about their imaginary playmates.

In addition, research suggests that contrary to the assumption that children with imaginary companions are compensating for poor social skills, several studies have found that these children are very sociable (Mauro, 1991; Singer & Singer, 1990; Gleason, 2002). However, studies have reported that children with imaginary companions are more likely to be first-borns or only-children (Masih, 1978; Gleason et al., 2000, Gleason, 2002). Although not all research has found a link between birth order and the incidence of imaginary playmates (Manosevitz, Prentice, & Wilson, 1973). Moreover, some studies have found little or no difference

in the presence of imaginary companions and parental divorce (Gleason et al., 2000), number of people in the home, or the amount of time children are spending with real playmates (Masih, 1978; Gleason & Hohmann, 2006).

Do children treat real friends differently? The answer appears to be not really. Young children view their relationship with their imaginary companion to be as supportive and nurturing as with their real friends. Gleason has suggested that this might suggest that children form a schema of what is a friend, and use this same schema in their interactions with both types of friends (Gleason, et al., 2000; Gleason, 2002; Gleason & Hohmann, 2006).

Children and the Media

Children view far more television today than in the 1960s; so much that they have been referred to as Generation M for Media. Almost all American families have at least one TV set, and half own three or more (Nielsen Company, 2009). For children age six and under, two-thirds watch television every day, usually for two hours (Rideout & Hamel, 2006). Even when involved in other activities, such as playing, there is often a television on nearby (Christakis, 2009; Kirkorian, Pempek, & Murphy, 2009). Research has consistently shown that too much television adversely affects children's behavior, health, and achievement (Gentile & Walsh, 2002; Robinson, Wilde, & Navracruz, 2001). Young children are less able to focus on active, hands-on play while the television is on, and background TV can negatively affect cognitive and language development as well as be linked to attention problems later in childhood (Schmidt, Pempek, & Kirkorian, 2008; Courage, Murphy, & Goulding, 2010).

4.23: Child Care

About 71.6 percent of mothers of school-aged and 58.9 percent of mothers of preschool aged children in the United States work outside the home (Bureau of Labor Statistics, 2015). Since more women have been entering the workplace, there has been a concern that families do not spend as much time with their children. This, however, is not true. Between 1981 and 1997, the amount of time that parents spent with children has increased overall (Sandberg & Hofferth, 2001).

To evaluate how early child care affects children's development, the National Institute of Child Health and Human Development (2006) conducted a longitudinal study. This study is considered the most comprehensive child care study to date, and began in 1991 when the children were one month of age. The study included an economically and ethnically diverse group of 1364 children assessed from 10 sites around the country. By design the study involved single parents, minority backgrounds, and differing formal education levels. Child care was defined as "any care provided on a regular basis by someone other than the child's mother" (p. 4). A regular basis included more than 10 hours per week. Child care arrangements included: Care from the father or another relative, care from a caregiver not related to the child in the child's home, small group care in the caregiver's home, and center-based care.

Overall results indicated that children cared for by their mothers did not develop differently than those who were cared for by others. Parents and family characteristics were stronger predictors of child development than child care facilities. Specifically, greater cognitive, language and social competence were demonstrated when parents were more educated, had higher incomes, and provided emotionally supportive and cognitively enriched home environments. When comparing higher quality child care with lower quality child care differences were noted. Higher quality care, as

measured by adult-to-child ratios, group size, and caregivers' educational and training levels, resulted in higher cognitive performance, better language comprehension and production, and higher levels of school readiness. Lower quality care predicted more behavioral problems and poorer cognitive, language, and school readiness.



Figure 4.24: A child care setting.

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. 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 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.

4.24: Child Abuse

The Child Abuse Prevention and Treatment Act (United States Department of Health and Human Services, 2013) defines **Child Abuse and Neglect** as: *Any recent act or failure to act on the part of a parent or caretaker which results in death, serious physical or emotional harm, sexual abuse or exploitation; or an act or failure to act, which presents an imminent risk of serious harm* (p. viii). Each state has its own definition of child abuse based on the federal law, and most states recognize four major types of maltreatment: neglect, physical abuse, psychological maltreatment, and sexual abuse. Each of the forms of child maltreatment may be identified alone, but they can occur in combination.

Victims of Child Abuse: During 2013 (the most recent year data has been collected) Child Protective Services (CPS) agencies received an estimated 3.5 million referrals involving approximately 6.4 million children, and 2.1 million referrals (60 percent) were investigated. This is a rate of 28.3 per 1,000 children in the national population. Professionals made three-fifths (61.6%) of alleged child abuse and neglect reports, and they included legal and law enforcement personnel (17.5%), education personnel (17.5%) and social services personnel (11.0%). Nonprofessionals, such as friends, neighbors, and relatives, submitted 18.6% of the reports. Approximately 3.9 million children were the subjects of at least one report, and 678,932 were found to be victims of child abuse and neglect (victim rate of 9.1 per 1,000 children). Victims in their first year of life had the highest rate of victimization (23.1 per 1,000 children of the same age). The majority of victims consisted of three ethnicities: White (44.0%), Hispanic (22.4%), and African-American (21.2%). The greatest percentages of children suffered from neglect (79.5%) and physical abuse (18.0%), although a child may have suffered from multiple forms of maltreatment. Nationally in 2013 an estimated 1,520 children died from abuse and neglect, and nearly

three-quarters (73.9%) of all child fatalities were younger than 3 years old. Boys had a higher child fatality rate (2.36 per 100,000 boys), while girls died of abuse and neglect at a rate of 1.77 per 100,000 girls. More than 85 percent (86.8%) of child fatalities were comprised of White (39.3%), African-American (33.0%), and Hispanic (14.5%) victims, and 78.9% of child fatalities were caused by one or both parents (United States Department of Health and Human Services, 2013).

Sexual Abuse: Childhood **sexual abuse** *is defined as any sexual contact between a child and an adult or a much older child.* **Incest** *refers to sexual contact between a child and family members.* In each of these cases, the child is exploited by an older person without regard for the child's developmental immaturity and inability to understand the sexual behavior (Steele, 1986). Research estimates that 1 out of 4 girls and 1 out of 10 boys have been sexually abused (Valente, 2005). The median age for sexual abuse is 8 or 9 years for both boys and girls (Finkelhorn, Hotaling, Lewis, & Smith, 1990). Most boys and girls are sexually abused by a male. Although rates of sexual abuse are higher for girls than for boys, boys may be less likely to report abuse because of the cultural expectation that boys should be able to take care of themselves and because of the stigma attached to homosexual encounters (Finkelhorn et. al., 1990). Girls are more likely to be abused by family member and boys by strangers. Sexual abuse can create feelings of self-blame, betrayal, and feelings of shame and guilt (Valente, 2005). Sexual abuse is particularly damaging when the perpetrator is someone the child trusts and may lead to depression, anxiety, problems with intimacy, and suicide (Valente, 2005).

Stress on Young Children: 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. 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 affect 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 and late childhood.

4.25: Canadian Resources

Below are resources that provide the Canadian context related to early childhood.

- Statistics Canada. (2021). *Child care arrangements for children aged 0 to 5 years, 2020* [Infographic]. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2021039-eng.htm
- Statistics Canada. (2019). *Early learning and child care arrangements for children 0 to 5 years* [Infographic]. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2019026-eng.htm
- The Vanier Institute of the Family. (2016). *Family Diversity in Canada 2016* [Infographic]. https://vanierinstitute.ca/infographic-family-diversity-in-canada-2016/
- Statistics Canada. (2017). *Physical activity of Canadian children and youth* [Infographic]. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2017034-eng.htm

4.26: Test your knowledge



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5: MIDDLE AND LATE CHILDHOOD

Learning Objectives: Physical Development in Middle and Late Childhood

- Summarize the overall physical growth
- Describe the changes in brain maturation
- Describe the positive effects of sports
- Describe reasons for a lack of participation in youth sports
- Explain current trends regarding being overweight in childhood, the negative consequences of excess weight, the lack of recognition of being overweight, and interventions to normalize weight

Middle and late childhood spans the ages between early childhood and adolescence, approximately ages 6 to 11. Children gain greater control over the movement of their bodies, mastering many gross and fine motor skills that eluded the younger child. Changes in the brain during this age enable not only physical development, but contributes to greater reasoning and flexibility of thought. School becomes a big part of middle and late childhood, and it expands their world beyond the boundaries of their own family. Peers start to take center-stage, often prompting changes in the parent-child relationship. Peer acceptance also influences children's perception of self and may have consequences for emotional development beyond these years.

5.1: Prelude to Middle and Late Childhood

Overall Physical Growth: Rates of growth generally slow during these years. Typically, a child will gain about 5-7 pounds a year and grow about 2-3 inches per year (CDC, 2000). They also tend to slim down and gain muscle strength and lung capacity making it possible to engage in strenuous physical activity for long periods of time. The beginning of the growth spurt, which occurs prior to puberty, begins two years earlier for females than males. The mean age for the beginning of the growth spurt for girls is nine, while for boys it is eleven. 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. In gross motor skills (involving large muscles) boys typically outperform girls, while with fine motor skills (small muscles) girls outperform the boys. These improvements in motor skills are related to brain growth and experience during this developmental period.

Brain Growth: Two major brain growth spurts occur during middle/late childhood (Spreen, Riser, & Edgell, 1995). Between ages 6 and 8, significant improvements in fine motor skills and eye-hand coordination are noted. Then between 10 and 12 years of age, the frontal lobes become more developed and improvements in logic, planning, and memory are evident (van der Molen & Molenaar, 1994). Myelination is one factor responsible for these growths. From age 6 to 12, the nerve cells in the association areas of the brain, that is those areas where sensory, motor, and intellectual functioning connect, become almost completely myelinated (Johnson, 2005). This myelination contributes to increases in information processing speed and the child's reaction time. The hippocampus, responsible for transferring information from the short-term to long-term memory, also show increases in myelination resulting in

improvements in memory functioning (Rolls, 2000). Children in middle to late childhood are also 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 (Markant & Thomas, 2013).

5.2: Sports

Middle childhood seems to be a great time to introduce children to organized sports, and in fact, many parents do. Nearly 3 million children play soccer in the United States (United States Youth Soccer, 2012). This activity promises to help children build social skills, improve athletically and learn a sense of competition. However, it has been suggested that the emphasis on competition and athletic 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 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.



Figure 5.1: Children playing soccer.

Sports are important for children. Children's participation in sports has been linked to:

- Higher levels of satisfaction with family and overall quality of life in children
- Improved physical and emotional development
- Better academic performance

Yet, a study on children's sports in the United States (Sabo & Veliz, 2008) has found that gender, poverty, location, ethnicity, and disability can limit opportunities to engage in sports. Girls were more likely to have never participated in any type of sport (see Figure 5.2).

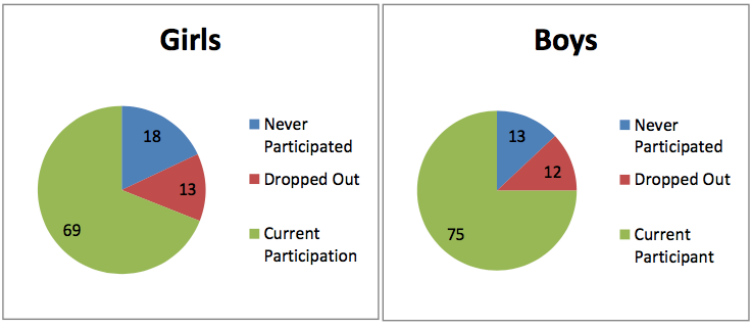


Figure 5.2: Participation in Organized and Team Sports (Percent) by Gender.

*Total girls (n=1051). Total boys (n=1081). T-test comparing gender and students who have never partcipated in sports. t=-3.038**, p=.002, df=2130*

They also found that fathers may not be providing their daughters as much support as they do their sons. While boys rated their fathers as their biggest mentor who taught them the most about sports, girls rated coaches and physical education teachers as their key mentors. Sabo and Veliz also found that children in suburban neighborhoods had a much higher participation of sports than boys and girls living in rural or urban centers. In addition, Caucasian girls and boys participated in organized sports at higher rates than minority children (see Figure 5.3).

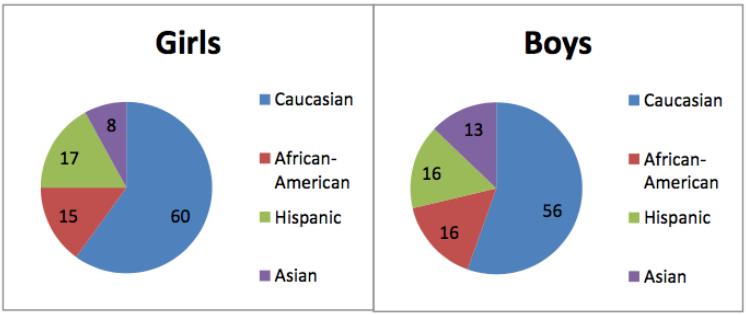


Figure 5.3: Percent of students participating in Organized Sports, by Gender, Race and Ethnicity.

Girls – Caucasian (*n*=425); *African-American* (*n*=106); *Hispanic* (*n*=124); *Asian* (*n*=55)

Boys – Caucasian (*n*=435); *African-American* (*n*=127); *Hispanic* (*n*=123); *Asian* (*n*=99)

Finally, Sabo and Veliz asked children who had dropped out of organized sports why they left. For both girls and boys, the number one answer was that it was no longer any fun (see Table 5.1). According to the Sport Policy and Research Collaborative (SPARC) (2013), almost 1 in 3 children drop out of organized sports, and while there are many factors involved in the decisions to drop out, one suggestion has been the lack of training that coaches of children's sports receive may be contributing to this attrition (Barnett, Smoll & Smith, 1992). Several studies have found that when coaches receive proper training the drop-out rate is about 5% instead of the usual 30% (Fraser-Thomas, Côté, & Deakin, 2005; SPARC, 2013).

***Table* 5.1: Top Rea**
Source: Sabo, D., & Veliz, P. (2008

Girls
I was not having fun
I wanted to focus more on studying and grades
I had a health problem or injury
I wanted to focus more on other clubs or activities
I did not like or get along with the coach
I did not like or get along with others on the team
I was not a good enough player
My family worried about me getting hurt or injured while playing sports

Welcome to the world of e-sports: The recent SPARC (2016) report on the "State of Play" in the United States highlights a disturbing trend. One in four children between the ages of 5 and 16 rate playing computer games with their friends as a form of exercise. In addition, **e-sports**, which as SPARC writes is about as much a sport as poker, *involves children watching other children play video games*. Over half of males, and about 20% of females, aged 12-19, say they are fans of e-sports.

Since 2008 there has also been a downward trend in the number of sports children are engaged in, despite a body of research evidence that suggests that specializing in only one activity can increase the chances of injury, while playing multiple sports is protective (SPARC, 2016). A University of Wisconsin study found that 49% of athletes who specialized in a sport experienced an injury compared with 23% of those who played multiple sports (McGuine, 2016).

Physical Education: For many children, physical education in

school is a key component in introducing children to sports. After years of schools cutting back on physical education programs, there has been a turn around, prompted by concerns over childhood obesity and the related health issues. Despite these changes, currently only the state of Oregon and the District of Columbia meet PE guidelines of a minimum of 150 minutes per week of physical activity in elementary school and 225 minutes in middle school (SPARC, 2016).

5.3: Childhood Obesity

The decreased participation in school physical education and youth sports is just one of many factors that has led to an increase in children being overweight or obese. The current measurement for determining excess weight is the **Body Mass Index (BMI)** *which expresses the relationship of height to weight*. According to the Centers for Disease Control and Prevention (CDC), *children's whose BMI is at or above the 85th percentile for their age* are considered **overweight**, while *children who are at or above the 95th percentile* are considered **obese** (Lu, 2016). In 2011-2012 approximately 8.4% of 2-5 year-olds were considered overweight or obese, and 17.7% of 6-11 year-olds were overweight or obese (CDC, 2014b).

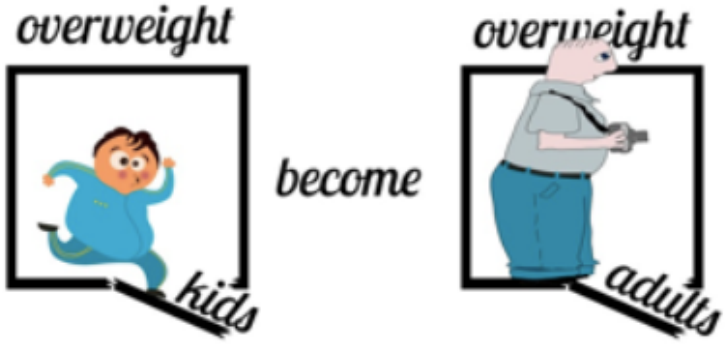


Figure 5.4: Being overweight can be a lifelong struggle.

Excess weight and obesity in children is associated with a variety of medical and cognitive conditions including high blood pressure, insulin resistance, inflammation, depression, and lower academic achievement (Lu, 2016). Being overweight has also been linked to impaired brain functioning, which includes deficits in executive functioning, working memory, mental flexibility, and decision-making (Liang, Matheson, Kaye, & Boutelle, 2014). Children who ate

more saturated fats performed worse on relational memory tasks, while eating a diet high in omega-3 fatty acids promoted relational memory skills (Davidson, 2014). Using animal studies Davidson et al. (2013) found that large amounts of processed sugars and saturated fat weakened the blood-brain barrier, especially in the hippocampus. This can make the brain more vulnerable to harmful substances that can impair its functioning. Another important executive functioning skill is controlling impulses and delaying gratification. Children who are overweight show less inhibitory control than normal weight children, which may make it more difficult for them to avoid unhealthy foods (Lu, 2016). Overall, being overweight as a child increases the risk for cognitive decline as one ages.

A growing concern is the *lack of recognition from parents that children are overweight or obese*. Katz (2015) referred to this as "**Oblivobesity**". Black et al. (2015) found that parents in the United Kingdom (UK) only recognized their children as obese when they were above the 99.7th percentile while the official cut-off for obesity is at the 85th percentile. Oude Luttikhuis, Stolk, and Sauer (2010) surveyed 439 parents and found that 75% of parents of overweight children said the child had a normal weight and 50% of parents of obese children said the child had a normal weight. For these parents, overweight was considered normal and obesity was considered normal or a little heavy. Doolen, Alpert, and Miller (2009) reported on several studies from the United Kingdom, Australia, Italy, and the United States, and in all locations parents were more likely to misperceive their children's weight. Black, Park, and Gregson (2015) concluded that as the average weight of children rises, what parents consider normal also rises. Needless to say, if parents cannot identify if their children are overweight they will not be able to intervene and assist their children with proper weight management.

An added concern is that the children themselves are not accurately identifying if they are overweight. In a United States sample of 8-15 year-olds, more than 80% of overweight boys and

70% of overweight girls misperceived their weight as normal (Sarafrazi, Hughes, & Borrud, 2014). Also noted was that as the socioeconomic status of the children rose, the frequency of these misconceptions decreased. It appeared that families with more resources were more conscious of what defines a healthy weight.

Children who are overweight tend to be rejected, ridiculed, teased and bullied by others (Stopbullying.gov, 2016). This can certainly be damaging to their self-image and popularity. In addition, obese children run the risk of suffering orthopedic problems such as knee injuries, and they have an increased risk of heart disease and stroke in adulthood (Lu, 2016). It is hard 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.



Figure 5.5: Children exercising.

Behavioral interventions, including training children to overcome impulsive behavior, are being researched to help overweight children (Lu, 2016). Practicing inhibition has been shown to strengthen the ability to resist unhealthy foods. Parents can help their overweight children the best when they are warm and supportive without using shame or guilt. Parents can also act like the child's frontal lobe until it is developed by helping them make correct food choices and praising their efforts (Liang, et al., 2014). Research also shows that exercise, especially aerobic exercise, can

help improve cognitive functioning in overweight children (Lu, 2016). Parents should take caution against emphasizing diet alone to avoid the development of any obsession about dieting that can lead to eating disorders. Instead, increasing a child's activity level is most helpful.

5.4: Cognitive Development in Middle and Late Childhood

Learning Objectives: Cognitive Development in Middle and Late Childhood

- Describe Piaget's concrete operational stage and the characteristics of concrete thought
- Describe information processing research on memory, attention, knowledge base, metacognition, and critical thinking
- Describe language development and explain the three types of communication disorders
- Describe the theories of intelligence, including general "g", triarchic theory, and Gardner's multiple intelligences
- Explain how intelligence is measured, the tests used to assess intelligence, the extremes in intelligence, and the concern of bias
- Describe how language and culture influence the typical classroom
- Identify common disabilities in childhood and the legislation that protects them educationally

Recall from the last chapter that children in early childhood are in Piaget's preoperational stage, and during this stage, children are learning to think symbolically about the world. Cognitive skills continue to expand in middle and late childhood as thought processes become more logical and organized when dealing with concrete information. Children at this age understand concepts such as past, present, and future, giving them the ability to plan and work toward goals. Additionally, they can process complex ideas such as addition and subtraction and cause-and- effect relationships.

Concrete Operational Thought

From ages 7 to 11, children are in what Piaget referred to as the **Concrete Operational Stage** of cognitive development (Crain, 2005). *This involves mastering the use of logic in concrete ways.* The word concrete refers to that which is tangible; that which can be seen, 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 can use logic to solve problems tied to their own direct experience, but has trouble solving hypothetical problems or considering more abstract problems. The child uses **Inductive Reasoning,** *which is a logical process in which multiple premises believed to be true are combined to obtain a specific conclusion.* 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. We will now explore some of the major abilities that the concrete child exhibits.

Classification: As children's experiences and vocabularies grow, *they build schemata and are able to organize objects in many different ways.* They also understand classification hierarchies and can arrange objects into a variety of classes and subclasses.

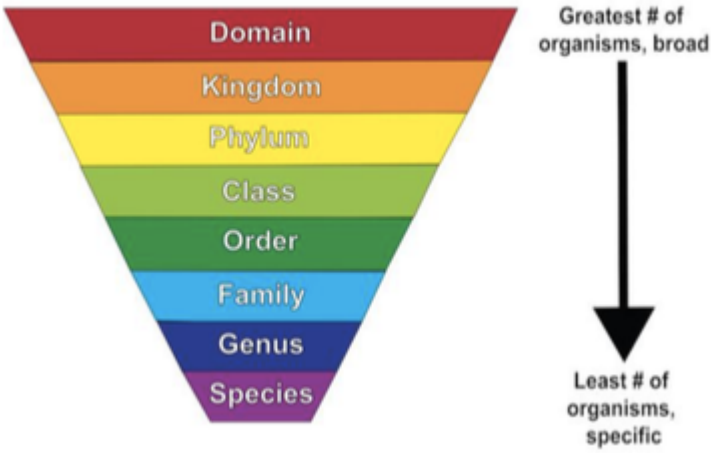


Figure 5.6: Children in the concrete operational stage understand how to classify organisms.

Identity: One feature of concrete operational thought is the understanding *that objects have 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.

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.

Conservation: Remember the example in our last chapter of preoperational 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 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).* This allows for conservation to occur.

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).

5.5: Information Processing

Children differ in their memory abilities, and these differences predict both their readiness for school and academic performance in school (PreBler, Krajewski, & Hasselhorn, 2013). During middle and late childhood children make strides in several areas of cognitive function including the capacity of working memory, their ability to pay attention, and their use of memory strategies. Both changes in the brain and experience foster these abilities.

Working Memory: The capacity of working memory expands during middle and late childhood, and research has suggested that both an increase in processing speed and the ability to inhibit irrelevant information from entering memory are contributing to the greater efficiency of working memory during this age (de Ribaupierre, 2002). Changes in myelination and synaptic pruning in the cortex are likely behind the increase in processing speed and ability to filter out irrelevant stimuli (Kail, McBride-Chang, Ferrer, Cho, & Shu, 2013).

Children with learning disabilities in math and reading often have difficulties with working memory (Alloway, 2009). They may struggle with following the directions of an assignment. When a task calls for multiple steps, children with poor working memory may miss steps because they may lose track of where they are in the task. Adults working with such children may need to communicate: Using more familiar vocabulary, using shorter sentences, repeating task instructions more frequently, and breaking more complex tasks into smaller more manageable steps. Some studies have also shown that more intensive training of working memory strategies, such as chunking, aid in improving the capacity of working memory in children with poor working memory (Alloway, Bibile, & Lau, 2013).

Attention: As noted above the ability to inhibit irrelevant information improves during this age group, with there being a sharp improvement in selective attention from age six into

adolescence (Vakil, Blachstein, Sheinman, & Greenstein, 2009). Children also improve in their ability to shift their attention between tasks or different features of a task (Carlson, Zelazo, & Faja, 2013). A younger child who is asked to sort objects into piles based on type of object, car versus animal, or color of object, red versus blue, may have difficulty if you switch from asking them to sort based on type to now having them sort based on color. This requires them to suppress the prior sorting rule. An older child has less difficulty making the switch, meaning there is greater flexibility in their attentional skills. These changes in attention and working memory contribute to children having more strategic approaches to challenging tasks.

Memory Strategies: Bjorklund (2005) describes a developmental progression in the acquisition and use of memory strategies. Such strategies are often lacking in younger children, but increase in frequency as children progress through elementary school. Examples of memory strategies include rehearsing information you wish to recall, visualizing and organizing information, creating rhymes, such "i" before "e" except after "c", or inventing acronyms, such as "roygbiv" to remember the colors of the rainbow. Schneider, Kron-Sperl, and Hünnerkopf (2009) reported a steady increase in the use of memory strategies from ages six to ten in their longitudinal study (see Table 5.2).

***Table* 5.2:**
Source:

Age
6
7
8
9
10

Moreover, by age ten many children were using two or more memory strategies to help them recall information. Schneider and colleagues found that there were considerable individual differences at each age in the use of strategies, and that children who utilized more strategies had better memory performance than their same aged peers.

Children may experience three deficiencies in their use of memory strategies. A **mediation deficiency** *occurs when a child does not grasp the strategy being taught, and thus, does not benefit from its use*. If you do not understand why using an acronym might be helpful, or how to create an acronym, the strategy is not likely to help you. In a **production deficiency** *the child does not spontaneously use a memory strategy, and has to be prompted to do so.* In this case, the child knows the strategy and is more than capable of using it, but they fail to "produce" the strategy on their own. For example, a child might know how to make a list, but may fail to do this to help them remember what to bring on a family vacation. A **utilization deficiency** *refers to a child using an appropriate strategy, but it fails to aid their performance*. Utilization deficiency is common in the early stages of learning a new memory strategy (Schneider & Pressley, 1997; Miller, 2000). Until the use of the strategy becomes automatic it may slow down the learning

process, as space is taken up in memory by the strategy itself. Initially, children may get frustrated because their memory performance may seem worse when they try to use the new strategy. Once children become more adept at using the strategy, their memory performance will improve. Sodian and Schneider (1999) found that new memory strategies acquired prior to age eight often show utilization deficiencies with there being a gradual improvement in the child's use of the strategy. In contrast, strategies acquired after this age often followed an "all-or-nothing" principle in which improvement was not gradual, but abrupt.

Knowledge Base: During middle and late 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. In other words, their **knowledge base**, *knowledge in particular areas that makes learning new information easier*, expands (Berger, 2014).

Metacognition: Children in middle and late childhood also have a better understanding of how well they are performing a task, and the level of difficulty of a task. As they become more realistic about their abilities, they can adapt studying strategies to meet those needs. Young children spend as much time on an unimportant aspect of a problem as they do on the main point, while older children start to learn to prioritize and gauge what is significant and what is not. As a result, they develop metacognition. **Metacognition** *refers to the knowledge we have about our own thinking and our ability to use this awareness to regulate our own cognitive processes* (Bruning, Schraw, Norby, & Ronning, 2004).

Critical Thinking: According to Bruning et al. (2004) there is a debate in U.S. education as to whether schools should teach students what to think or how to think. **Critical thinking**, *or a detailed examination of beliefs, courses of action, and evidence*, involves teaching children how to think. The purpose of critical

thinking is to evaluate information in ways that help us make informed decisions. Critical thinking involves better understanding a problem through gathering, evaluating, and selecting information, and also by considering many possible solutions. Ennis (1987) identified several skills useful in critical thinking. These include: Analyzing arguments, clarifying information, judging the credibility of a source, making value judgements, and deciding on an action. Metacognition is essential to critical thinking because it allows us to reflect on the information as we make decisions.

5.6: 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 fifth grade, a child's vocabulary has grown to 40,000 words. It grows at a rate that exceeds that of those in early childhood. This language explosion, however, differs from that of younger children because it is facilitated by being able to associate new words with those already known, and because it is accompanied by a more sophisticated understanding of the meanings of a word.

New Understanding: Those in middle and late childhood are also able to think of objects in less literal ways. For example, if asked for the first word that comes to mind when one hears the word "pizza", the younger child is likely to say "eat" or some word that describes what is done with a pizza. However, the older child is more likely to place pizza in the appropriate category and say "food". This sophistication of vocabulary is also evidenced by the fact that older children tell jokes and delight in doing do. They may use jokes that involve plays on words such as "knock- knock" jokes or jokes with punch lines. Young children do not understand play on words and tell "jokes" that are literal or slapstick, such as "A man fell down in the mud! Isn't that funny?"

Grammar and Flexibility: Older children are also able to learn new rules of grammar with more flexibility. While younger children are likely to be reluctant to give up saying "I goed there", older children will learn this rather quickly along with other rules of grammar.



Figure 5.7: A young girl writing.

Bilingualism: Although monolingual speakers often do not realize it, the majority of children around the world are **Bilingual**, *meaning that they understand and use two languages* (Meyers- Sutton, 2005). Even in the United States, which is a relatively monolingual society, more than 47 million people speak a language other than English at home, and about 10 million of these people are children or youths in public schools (United States Department of Commerce, 2003). The large majority of bilingual students (75%) are Hispanic, but the rest represent more than a hundred different language groups from around the world. In larger communities throughout the United States, it is therefore common for a single classroom to contain students from several language backgrounds at once. In classrooms, as in other social settings, bilingualism exists in different forms and degrees. At one extreme are students who speak both English and another language fluently; at the other extreme are those who speak only limited versions of both languages. In between are students who speak their home (or heritage) language much better than English, as well as others who have partially lost their heritage language in the process of learning English (Tse, 2001). Commonly,

a student may speak a language satisfactorily, but be challenged by reading or writing it. Whatever the case, each bilingual student poses unique challenges to teachers.

The student who speaks both languages fluently has a definite cognitive advantage. As you might suspect and research confirmed, a fully fluent bilingual student is in a better position to express concepts or ideas in more than one way, and to be aware of doing so (Jimenez, Garcia, & Pearson, 1995; Francis, 2006). Unfortunately, the bilingualism of many students is unbalanced in the sense that they are either still learning English, or else they have lost some earlier ability to use their original, heritage language. Losing one's original language is a concern as research finds that language loss limits students' ability to learn English as well or as quickly as they could do. Having a large vocabulary in a first language has been shown to save time in learning vocabulary in a second language (Hansen, Umeda & McKinney, 2002). Preserving the first language is important if a student has impaired skill in all languages and therefore needs intervention or help from a speech-language specialist. Research has found, in such cases, that the specialist can be more effective if the specialist speaks and uses the first language as well as English (Kohnert, Yim, Nett, Kan, & Duran, 2005).

Communication Disorders

At the end of early childhood children are often assessed in terms of their ability to speak properly. By first grade, about 5% of children have a notable speech disorder (Medline Plus, 2016c).

Fluency disorders: Fluency disorders *affect the rate of speech.* Speech may be labored and slow, or too fast for listeners to follow. The most common fluency disorder is stuttering. **Stuttering** *is a speech disorder in which sounds, syllables, or words are repeated or last longer than normal.* These problems cause a break in the flow of speech, which is called dysfluency (Medline Plus, 2016b). About

5% of young children, aged two-five, will develop some stuttering that may last from several weeks to several years (Medline Plus, 2016c). Approximately 75% of children recover from stuttering. For the remaining 25%, stuttering can persist as a lifelong communication disorder (National Institute on Deafness and other Communication Disorders, NIDCD, 2016). This is called developmental stuttering and is the most common form of stuttering. Brain injury, and in very rare instances, emotional trauma may be other triggers for developing problems with stuttering. In most cases of developmental stuttering, other family members share the same communication disorder. Researchers have recently identified variants in four genes that are more commonly found in those who stutter (NIDCD, 2016).

Articulation disorder: An **articulation disorder** *refers to the inability to correctly produce speech sounds (phonemes) because of imprecise placement, timing, pressure, speed, or flow of movement of the lips, tongue, or throat* (NIDCD, 2016). Sounds can be substituted, left off, added or changed. These errors may make it hard for people to understand the speaker. They can range from problems with specific sounds, such as lisping to severe impairment in the phonological system. Most children have problems pronouncing words early on while their speech is developing. However, by age three, at least half of what a child says should be understood by a stranger. By age five, a child's speech should be mostly intelligible. Parents should seek help if by age six the child is still having trouble producing certain sounds. It should be noted that accents are not articulation disorders (Medline Plus, 2016a).

Voice disorders: Disorders of the voice *involve problems with pitch, loudness, and quality of the voice* (American Speech-Language and Hearing Association, 2016). It only becomes a disorder when problems with the voice makes the child unintelligible. In children, voice disorders are significantly more prevalent in males than in females. Between 1.4% and 6% of children experience problems with the quality of their voice. Causes can be due to structural abnormalities in the vocal cords and/or larynx, functional factors,

such as vocal fatigue from overuse, and in rarer cases psychological factors, such as chronic stress and anxiety.

5.7: Theories of Intelligence

Psychologists have long debated how to best conceptualize and measure intelligence (Sternberg, 2003). These questions include how many types of intelligence there are, the role of nature versus nurture in intelligence, how intelligence is represented in the brain, and the meaning of group differences in intelligence.

General (g) Versus Specific (s) Intelligences: From 1904- 1905 the French psychologist Alfred Binet (1857–1914) and his colleague Théodore Simon (1872–1961) began working on behalf of the French government to develop a measure that would identify children who would not be successful with the regular school curriculum. The goal was to help teachers better educate these students (Aiken, 1994). Binet and Simon developed what most psychologists today regard as the first intelligence test, which consisted of a wide variety of questions that included the ability to name objects, define words, draw pictures, complete sentences, compare items, and construct sentences.



Figure 5.8: Alfred Binet.

Binet and Simon (Binet, Simon, & Town, 1915; Siegler, 1992) believed that the questions they asked the children all assessed the basic abilities to understand, reason, and make judgments. It turned out that the correlations among these different types of measures were in fact all positive; that is, students who got one item correct were more likely to also get other items correct, even though the questions themselves were very different.

On the basis of these results, the psychologist Charles Spearman (1863–1945) hypothesized that there must be a single underlying construct that all of these items measure. He called *the construct that the different abilities and skills measured on intelligence tests have in common* the **General Intelligence Factor (g).** Virtually all psychologists now believe that there is a generalized intelligence factor, "g", that relates to abstract thinking and that includes the abilities to acquire knowledge, to reason abstractly, to adapt to novel situations, and to benefit from instruction and experience (Gottfredson, 1997; Sternberg, 2003). People with higher general intelligence learn faster.



Figure 5.9: Have you taken an intelligence test? © Thinkstock

Soon after Binet and Simon introduced their test, the American psychologist Lewis Terman at Stanford University (1877–1956) developed an American version of Binet's test that became known as the *Stanford-Binet Intelligence Test*. The Stanford-Binet is a measure of general intelligence made up of a wide variety of tasks including

vocabulary, memory for pictures, naming of familiar objects, repeating sentences, and following commands.

Although there is general agreement among psychologists that "g" exists, there is also evidence for **Specific Intelligence (s),** *a measure of specific skills in narrow domains*. One empirical result in support of the idea of "s" comes from intelligence tests themselves.Althoughthedifferenttypesof questions do correlate with each other, some items correlate more highly with each other than do other items; they form clusters or clumps of intelligences.

Triarchic Theory: One advocate of the idea of multiple intelligences is the psychologist Robert Sternberg. Sternberg has proposed a **Triarchic (three-part) Theory of Intelligence** that proposes that *people may display more or less analytical intelligence, creative intelligence, and practical intelligence*. Sternberg (1985, 2003) argued that traditional intelligence tests assess **Analytical Intelligence**, *academic problem solving and performing calculations*, but that they do not typically assess **Creative Intelligence**, *the ability to adapt to new situations and create new ideas*, and/or **Practical Intelligence**, *the ability to demonstrate common sense and street- smarts.*



Figure 5.10: How many uses for a paper clip can you think of? © Thinkstock

As Sternberg proposed, research has found that creativity is not highly correlated with analytical intelligence (Furnham & Bachtiar, 2008) and exceptionally creative scientists, artists, mathematicians, and engineers do not score higher on intelligence than do their less

creative peers (Simonton, 2000). Furthermore, the brain areas that are associated with **Convergent Thinking**, *thinking that is directed toward finding the correct answer to a given problem*, are different from those associated with **Divergent Thinking**, *the ability to generate many different ideas or solutions to a single problem* (Tarasova, Volf, & Razoumnikova, 2010). On the other hand, being creative often takes some of the basic abilities measured by "g", including the abilities to learn from experience, to remember information, and to think abstractly

(Bink & Marsh, 2000). Ericsson (1998), Weisberg (2006), Hennessey and Amabile (2010) and Simonton (1992) studied creative people and identified at least five components that are likely to be important for creativity as listed in Table 5.3.

Ta

Component	
Expertise	
Imaginative Thinking	
Risk Taking	
Intrinsic Interest	
Working in Creative Environments	

The last aspect of the triarchic model, practical intelligence, refers primarily to intelligence that cannot be gained from books or formal learning. Practical intelligence represents a type of "street smarts" or "common sense" that is learned from life experiences. Although a number of tests have been devised to measure practical intelligence (Sternberg, Wagner, & Okagaki, 1993; Wagner & Sternberg, 1985), research has not found much evidence that practical intelligence is distinct from "g" or that it is predictive of success at any particular tasks (Gottfredson, 2003). Practical intelligence may include, at least

in part, certain abilities that help people perform well at specific jobs, and these abilities may not always be highly correlated with general intelligence (Sternbergetal.,1993).

Theory of Multiple Intelligences: Another champion of the idea of specific types of intelligences rather than one overall intelligence is the psychologist Howard Gardner (1983, 1999). Gardner argued that it would be evolutionarily functional for different people to have different talents and skills, and proposed that there are eight intelligences that can be differentiated from each other. A potential ninth intelligence; that is, existential still needs empirical support. Gardner investigated intelligences by focusing on children who were talented in one or more areas and adults who suffered from strokes that compromised some capacities, but not others. Gardner also noted that some evidence for multiple intelligences comes from the abilities of **autistic savants**, *people who score low on intelligence tests overall but who nevertheless may have exceptional skills in a given domain*, such as math, music, art, or in being able to recite statistics in a given sport (Treffert & Wallace, 2004). In addition to brain damage and the existence of savants, Gardner identified these 8 intelligences based on other criteria including a set developmental history and psychometric findings. See Table 5.4 for a list of Gardner's eight specific intelligences.

Table 5
Source: Adapted from Gardner, H. (1999). Int

Intelligence
Linguistic
Logical-mathematical
Spatial
Musical
Kinesthetic (body)
Interpersonal
Intrapersonal
Naturalistic



Figure 5.11: Although intelligence is often conceptualized in a general way (as the "g" factor), there is a variety of specific skills that can be useful for particular tasks. © Thinkstock

The idea of multiple intelligences has been influential in the field of education, and teachers have used these ideas to try to teach differently to different students. For instance, to teach math problems to students who have particularly good kinesthetic intelligence, a teacher might encourage the students to move their bodies or hands according to the numbers. On the other hand, some have argued that these "intelligences" sometimes seem more like "abilities" or "talents" rather than real intelligence. There is no clear conclusion about how many intelligences there are. Are sense of humor, artistic skills, dramatic skills, and so forth also separate intelligences? Furthermore, and again demonstrating the underlying power of a single intelligence, the many different intelligences are in fact correlated and thus represent, in part, "g" (Brody, 2003).

5.8: Measuring Intelligence - Standardization and the Intelligence Quotient

The goal of most intelligence tests is to measure "g", the general intelligence factor. Good intelligence tests are **reliable,** *meaning that they are consistent over time*, and also demonstrate **validity,** *meaning that they actually measure intelligence rather than something else*. Because intelligence is such an important individual difference dimension, psychologists have invested substantial effort in creating and improving measures of intelligence, and these tests are now considered the most accurate of all psychological tests. In fact, the ability to accurately assess intelligence is one of the most important contributions of psychology to everyday public life.

Intelligence changes with age. A 3-year-old who could accurately multiply 183 by 39 would certainly be intelligent, but a 25-year-old who could not do so would be seen as unintelligent. Thus understanding intelligence requires that we know the norms or standards in a given population of people at a given age. The **standardization** of a test involves *giving it to a large number of people at different ages and computing the average score on the test at each age level.*

It is important that intelligence tests be standardized on a regular basis, because the overall level of intelligence in a population may change over time. The **Flynn effect** refers to *the observation that scores on intelligence tests worldwide have increased substantially over the past decades* (Flynn, 1999). Although the increase varies somewhat from country to country, the average increase is about 3 IQ points every 10 years. There are many explanations for the Flynn effect, including better nutrition, increased access to information, and more familiarity with multiple-choice tests (Neisser, 1998). But

whether people are actually getting smarter is debatable (Neisser, 1997).

Once the standardization has been accomplished, we have a picture of the average abilities of people at different ages and can calculate a person's **mental age**, which is *the age at which a person is performing intellectually*. If we compare the mental age of a person to the person's chronological age, the result is the **Intelligence Quotient (IQ),** *a measure of intelligence that is adjusted for age*. A simple way to calculate IQ is by using the following formula:

$$\text{IQ} = \frac{\text{mental age}}{\text{chronological age}} \times 100. \quad (5.8.1)$$

(5.8.1)IQ=mental agechronological age×100.

Thus a 10-year-old child who does as well as the average 10-year-old child has an IQ of 100 (10 : 10 × 100), whereas an 8-year-old child who does as well as the average 10-year-old child would have an IQ of 125 (10 : 8 × 100). Most modern intelligence tests are based on the relative position of a person's score among people of the same age, rather than on the basis of this formula, but the idea of an intelligence "ratio" or "quotient" provides a good description of the score's meaning.

Wechsler Scales

A number of scales are based on the IQ. The **Wechsler Adult Intelligence Scale (WAIS)** is *the most widely used intelligence test for adults* (Watkins, Campbell, Nieberding, & Hallmark, 1995). The current version of the WAIS, the WAIS-IV, was standardized on 2,200 people ranging from 16 to 90 years of age. It consists of 15 different tasks, each designed to assess intelligence, including working memory, arithmetic ability, spatial ability, and general knowledge about the world. The WAIS-IV yields scores on four domains: verbal, perceptual, working memory, and processing

speed. The reliability of the test is high (more than 0.95), and it shows substantial construct validity. The WAIS-IV is correlated highly with other IQ tests such as the Stanford-Binet, as well as with criteria of academic and life success, including college grades, measures of work performance, and occupational level. It also shows significant correlations with measures of everyday functioning among people with intellectual disabilities.

The Wechsler scale has also been adapted for preschool children in the form of the *Wechsler Primary and Preschool Scale of Intelligence-Fourth Edition* (WPPSI-IV) and for older children and adolescents in the form of the *Wechsler Intelligence Scale for Children-Fifth Edition* (WISC-V). Figure 5.12 illustrates items from the WAIS.



Figure 5.12: Sample Items from the Wechsler Adult Intelligence Scale (WAIS).

Bias: Intelligence tests and psychological definitions of intelligence have been heavily criticized since the 1970s for being biased in favor of Anglo-American, middle-class respondents and for being inadequate tools for measuring non-academic types of intelligence or talent. Intelligence changes with experience, and intelligence quotients or scores do not reflect that ability to change. What is considered smart varies culturally as well, and most intelligence tests do not take this variation into account. For example, in the West, being smart is associated with being quick. A person who answers a question the fastest is seen as the smartest, but in some cultures being smart is associated with considering

an idea thoroughly before giving an answer. A well-thought out, contemplative answer is the best answer.

Extremes of Intelligence: Intellectual Disability and Giftedness

The results of studies assessing the measurement of intelligence show that IQ is distributed in the population in the form of a **Normal Distribution (or bell curve),** which *is the pattern of scores usually observed in a variable that clusters around its average*. In a normal distribution, the bulk of the scores fall toward the middle, with many fewer scores falling at the extremes. The normal distribution of intelligence shows that on IQ tests, as well as on most other measures, the majority of people cluster around the average (in this case, where IQ = 100), and fewer are either very smart or very dull (see Figure 5.13). Because the standard deviation of an IQ test is about 15, this means that about 2% of people score above an IQ of 130, often considered the threshold for giftedness, and about the same percentage score below an IQ of 70, often being considered the threshold for an intellectual disability.

Although Figure 5.13 presents a single distribution, the actual IQ distribution varies by sex such that the distribution for men is more spread out than is the distribution for women. These sex differences mean that about 20% more men than women fall in the extreme (very smart or very dull) ends of the distribution (Johnson, Carothers, & Deary, 2009). Boys are about five times more likely to be diagnosed with the reading disability dyslexia than are girls (Halpern, 1992), and are also more likely to be classified as having an intellectual disability. However, boys are also about 20% more highly represented in the upper end of the IQ distribution.

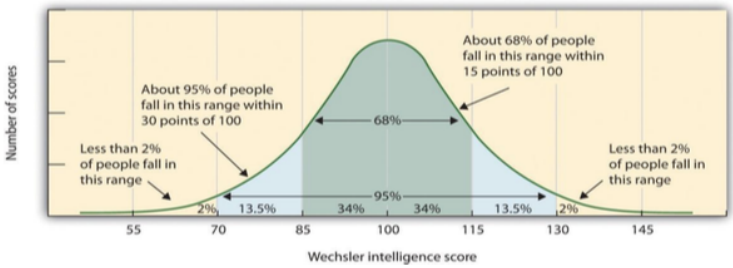


Figure 5.13: Distribution of IQ scores in the general population. The normal distribution of IQ scores in the general population shows that most people have about average intelligence, while very few have extremely high or extremely low intelligence.

One end of the distribution of intelligence scores is defined by people with very low IQ. **Intellectual disability** (or **intellectual developmental disorder**) is assessed based on cognitive capacity (IQ) and adaptive functioning. The severity of the disability is based on adaptive functioning, or how well the person handles everyday life tasks. About 1% of the United States population, most of them males, fulfill the criteria for intellectual developmental disorder, but some children who are given this diagnosis lose the classification as they get older and better learn to function in society. A particular vulnerability of people with low IQ is that they may be taken advantage of by others, and this is an important aspect of the definition of intellectual developmental disorder (Greenspan, Loughlin, & Black, 2001).

One cause of intellectual developmental disorder is **Down syndrome**, *a chromosomal disorder caused by the presence of all or part of an extra* 21st *chromosome*. The incidence of Down syndrome is estimated at approximately 1 per 700 births, and the prevalence increases as the mother's age increases (CDC, 2014a). People with Down syndrome typically exhibit a distinctive pattern of physical features, including a flat nose, upwardly slanted eyes, a protruding tongue, and a short neck (see Figure 5.14).



Figure 5.14: Individuals with Down syndrome. © *Thinkstock*

Fortunately, societal attitudes toward individuals with intellectual disabilities have changed over the past decades.Wenolongeruseterms such as "retarded," "moron," "idiot," or "imbecile" to describe people with intellectual deficits, although these were the official psychological terms used to describe degrees of what was referred to as mental retardation in the past. Laws such as the Americans with Disabilities Act (ADA) have made it illegal to discriminate on the basis of mental and physical disability, and there has been a trend to bring people with mental disabilities out of institutions and into our workplaces and schools.

Giftedness *refers to children who have an IQ of 130 or higher* (Lally & Valentine-French, 2015). Having extremely high IQ is clearly less of a problem than having extremely low IQ, but there may also be challenges to being particularly smart. It is often assumed that schoolchildren who are labeled as "gifted" may have adjustment problems that make it more difficult for them to create social relationships. To study gifted children, Lewis Terman and his colleagues (Terman & Oden, 1959) selected about 1,500 high school students who scored in the top 1% on the Stanford-Binet and similar IQ tests (i.e., who had IQs of about 135 or higher), and tracked them for more than seven decades (the children became known as the "termites" and are still being studied today). This study found that these students were not unhealthy or poorly adjusted, but rather were above average in physical health and were taller and heavier than individuals in the general population. The students also had

above average social relationships and were less likely to divorce than the average person (Seagoe, 1975).



Figure 5.15: The popular stereotype of highly intelligent people as physically uncoordinated and unpopular is not true. © Thinkstock

Terman's study also found that many of these students went on to achieve high levels of education and entered prestigious professions, including medicine, law, and science. Of the sample, 7% earned doctoral degrees, 4% earned medical degrees, and 6% earned law degrees. These numbers are all considerably higher than what would have been expected from a more general population. Another study of young adolescents who had even higher IQs found that these students ended up attending graduate school at a rate more than 50 times higher than that in the general population (Lubinski & Benbow, 2006).

As you might expect based on our discussion of intelligence, kids who are gifted have higher scores on general intelligence "g", but there are also different types of giftedness. Some children are particularly good at math or science, some at automobile repair or carpentry, some at music or art, some at sports or leadership, and so on. There is a lively debate among scholars about

5.9: Education

Remember the ecological systems model that we explored in chapter one? This model helps us understand an individual by examining the contexts in which the person lives and the direct and indirect influences on that person's life. School becomes a very important component of children's lives during middle and late childhood, and parents and the culture contribute to children's experiences in school as indicated by the ecological systems model through their interaction with the school.

Parental Involvement in School: Parents vary in their level of involvement with their children's schools. Teachers often complain that they have difficulty getting parents to participate in their child's education and devise a variety of techniques to keep parents in touch with daily and overall progress. For example, parents may be required to sign a behavior chart each evening to be returned to school or may be given information about the school's events through websites and newsletters. There are other factors that need to be considered when looking at parental involvement. To explore these, first ask yourself if all parents who enter the school with concerns about their child be received in the same way?

Horvat (2004) found that teachers seek a particular type of involvement from particular types of parents. While teachers thought they were open and neutral in their responses to parental involvement, in reality teachers were most receptive to support, praise and agreement coming from parents who were most similar in race and social class with the teachers. Parents who criticized the school or its policies were less likely to be given voice. Parents who have higher levels of income, occupational status, and other qualities favored in society have **family capital.** *This is a form of power that can be used to improve a child's education.* Parents who do not have these qualities may find it more difficult to be effectively involved. The authors suggest that teachers closely examine their

biases against parents. Schools may also need to examine their ability to dialogue with parents about school policies in more open ways. Any efforts to improve effective parental involvement should address these concerns.

Cultural Differences in the Classroom

Cultures and ethnic groups differ not only in languages, but also in how languages are used. Since some of the patterns differ from those typical of modern classrooms, they can create misunderstandings between teachers and students (Cazden, 2001; Rogers, et al., 2005). Consider these examples:



Figure 5.16: How do classrooms accommodate different cultures?

- In some cultures, it is considered polite or even intelligent not to speak unless you have something truly important to say. Chitchat, or talk that simply affirms a personal tie between people, is considered immature or intrusive (Minami, 2002). In a classroom, this habit can make it easier for a child to learn

not to interrupt others, but it can also make the child seem unfriendly.

- Eye contact varies by culture. In many African American and Latin American communities, it is considered appropriate and respectful for a child not to look directly at an adult who is speaking to them (Torres-Guzman, 1998). In classrooms, however, teachers often expect a lot of eye contact (as in "I want all eyes on me!") and may be tempted to construe lack of eye contact as a sign of indifference or disrespect.
- Social distance varies by culture. In some cultures, it is common to stand relatively close when having a conversation; in others, it is more customary to stand relatively far apart (Beaulieu, 2004). Problems may happen when a teacher and a student prefer different social distances. A student who expects a closer distance than does the teacher may seem overly familiar or intrusive, whereas one who expects a longer distance may seem overly formal or hesitant.
- Wait time varies by culture. Wait time is the gap between the end of one person's comment or question and the next person's reply or answer. In some cultures wait time is relatively long, as long as three or four seconds (Tharp & Gallimore, 1989). In others it is a negative gap, meaning that it is acceptable, even expected, for a person to interrupt before the end of the previous comment. In classrooms the wait time is customarily about one second; after that, the teacher is likely to move on to another question or to another student. A student who habitually expects a wait time longer than one second may seem hesitant, and not be given many chances to speak. A student who expects a negative wait time, on the other hand, may seem overeager or even rude.
- In most non-Anglo cultures, questions are intended to gain information, and it is assumed that a person asking the question truly does not have the information requested (Rogoff, 2003). In most classrooms, however, teachers regularly ask test questions, which are questions to which the teacher

already knows the answer and that simply assess whether a student knows the answer as well (Macbeth, 2003). The question: "How much is 2 + 2?" for example, is a test question. If the student is not aware of this purpose, he or she may become confused, or think that the teacher is surprisingly ignorant. Worse yet, the student may feel that the teacher is trying deliberately to shame the student by revealing the student's ignorance or incompetence to others.



Figure 5.17: Three young female students.

- Preference for activities that are cooperative rather than competitive. Many activities in school are competitive, even when teachers try to de-emphasize the competition. Once past the first year or second year of school, students often become attentive to who receives the highest marks on an assignment, for example, or who is the best athlete at various sports or whose contributions to class discussions gets the most verbal recognition from the teacher (Johnson & Johnson, 1998). A teacher deliberately organizes important activities or assignments competitively, as in "Let's see who finishes the

math sheet first". Classroom life can then become explicitly competitive, and the competitive atmosphere can interfere with cultivating supportive relationships among students or between students and the teacher (Cohen, 2004). For students who give priority to these relationships, competition can seem confusing at best and threatening at worst. A student may wonder, "What sort of sharing or helping with answers is allowed?" The answer to this question may be different depending on the cultural background of the student and teacher. What the student views as cooperative sharing may be seen by the teacher as laziness, freeloading, or even cheating.

What happened to No Child Left Behind?

Children's academic performance is often measured with the use of standardized tests. **Achievement tests** *are used to measure what a child has already learned.* Achievement tests are often used as measures of teaching effectiveness within a school setting and as a method to make schools that receive tax dollars (such as public schools, charter schools, and private schools that receive vouchers) accountable to the government for their performance. In 2001, President Bush signed into effect Public Law 107-110, better known as the **No Child Left Behind Act** mandating that schools administer achievement tests to students and publish those results so that parents have an idea of their children's performance. Additionally, the government would have information on the gaps in educational achievement between children from various social class, racial, and ethnic groups. Schools that showed significant gaps in these levels of performance were mandated to work toward narrowing these gaps. Educators criticized the policy for focusing too much on testing as the only indication of student performance. Target goals were considered unrealistic and set by the federal government rather than individual states. Because these requirements became increasingly unworkable for schools, changes to the law were requested. On December 12, 2015 President Obama signed into law the **Every Student Succeeds Act (ESSA)**. This law is state driven and focuses on expanding educational opportunities and improving student outcomes, including in the areas of high school graduation, drop-out rates, and college attendance.

5.10: Children with Learning Disabilities

A **Learning Disability** (or LD) *is a specific impairment of academic learning that interferes with a specific aspect of schoolwork and that reduces a student's academic performance significantly.* A LD shows itself as a major discrepancy between a student's ability and some feature of achievement: The student may be delayed in reading, writing, listening, speaking, or doing mathematics, but not in all of these at once. A learning problem is not considered a learning disability if it stems from physical, sensory, or motor handicaps, or from generalized intellectual impairment. It is also not an LD if the learning problem really reflects the challenges of learning English as a second language. Genuine LDs are the learning problems left over after these other possibilities are accounted for or excluded. Typically, a student with an LD has not been helped by teachers' ordinary efforts to assist the student when he or she falls behind academically, though what counts as an "ordinary effort", of course, differs among teachers, schools, and students. Most importantly, though, an LD relates to a fairly specific area of academic learning. A student may be able to read and compute well enough, for example, but not be able to write. LDs are by far the most common form of special educational need, accounting for half of all students with special needs in the United States and anywhere from 5 to 20 per cent of all students, depending on how the numbers are estimated (United States Department of Education, 2005; Ysseldyke & Bielinski, 2002). Students with LDs are so common, in fact, that most teachers regularly encounter at least one per class in any given school year, regardless of the grade level they teach.

These difficulties are identified in school because this is when children's academic abilities are being tested, compared, and measured. Consequently, once academic testing is no longer

essential in that person's life (as when they are working rather than going to school) these disabilities may no longer be noticed or relevant, depending on the person's job and the extent of the disability.

Dyslexia is one of the most commonly diagnosed disabilities and *involves having difficulty in the area of reading.* This diagnosis is used for a number of reading difficulties. Common characteristics are difficulty with phonological processing, which includes the manipulation of sounds, spelling, and rapid visual/verbal processing. Additionally, the child may reverse letters, have difficulty reading from left to right, or may have problems associating letters with sounds. It appears to be rooted in neurological problems involving the parts of the brain active in recognizing letters, verbally responding, or being able to manipulate sounds. Recent studies have identified a number of genes that are linked to developing dyslexia (National Institute of Neurological Disorders and Stroke, 2016). Treatment typically involves altering teaching methods to accommodate the person's particular problematic area.

Dysgraphia or *a writing disability*, is often associated with dyslexia (Carlson, 2013). There are different types of dysgraphia, including phonological dysgraphia when the person cannot sound out words and write them phonetically. Orthographic dysgraphia is demonstrated by those individuals who can spell regularly spelled words, but not irregularly spelled ones. Some individuals with dysgraphia experience difficulties in motor control and experience trouble forming letters when using a pen or pencil.



Figure 5.18: Children with learning disabilities.

Dyscalculia *refers to problems in math.* Cowan and Powell (2014) identified several terms used when describing difficulties in mathematics including dyscalculia, mathematical learning disability, and mathematics disorder. All three terms refer to students with average intelligence who exhibit poor academic performance in mathematics. When evaluating a group of third graders, Cowan and Powell (2014) found that children with dyscalculia demonstrated problems with working memory, reasoning, processing speed and oral language, all of which are referred to as domain-general factors. Additionally, problems with multi-digit skills, including number system knowledge, were also exhibited.

A child with **Attention Deficit Hyperactivity Disorder** (ADHD) *shows a constant pattern of inattention and/or hyperactive and impulsive behavior that interferes with normal functioning* (American Psychological Association (APA), 2013). Some of the signs of inattention include great difficulty with, and avoidance of, tasks that require sustained attention(suchasconversationsorreading),failure to follow instructions (often resulting in failure to complete school work and other duties), disorganization (difficulty keeping things in order, poor time management, sloppy and messy work), lack of attention to detail, becoming easily distracted, and forgetfulness. Hyperactivity

is characterized by excessive movement, and includes fidgeting or squirming, leaving one's seat in situations when remaining seated is expected, having trouble sitting still (e.g., in a restaurant), running about and climbing on things, blurting out responses before another person's question or statement has been completed, difficulty waiting one's turn for something, and interrupting and intruding on others. Frequently, the hyperactive child comes across as noisy and boisterous. The child's behavior is hasty, impulsive, and seems to occur withoutmuch forethought; these characteristics may explain why adolescents and young adults diagnosed with ADHD receive more traffic tickets and have more automobile accidents than do others their age (Thompson, Molina, Pelham, & Gnagy, 2007).



Figure 5.19: Hyperactivity is characterized by excessive movement.

ADHD occurs in about 5% of children (APA, 2013). On the average, boys are 3 times more likely to have ADHD than are girls; however, such findings might reflect the greater propensity of boys to engage in aggressive and antisocial behavior and thus incur a greater likelihood of being referred to psychological clinics (Barkley, 2006). Children with ADHD face severe academic and social challenges. Compared to their non-ADHD counterparts, children with ADHD have lower grades and standardized test scores and higher rates of expulsion, grade retention, and dropping out (Loe & Feldman, 2007). They also are less well- liked and more often rejected by their peers (Hoza et al., 2005).

ADHD can persist into adolescence and adulthood (Barkley, Fischer, Smallish, & Fletcher, 2002). A recent study found that 29.3% of adults who had been diagnosed with ADHD decades earlier still showed symptoms (Barbaresi et al., 2013). Somewhat troubling, this study also reported that nearly 81% of those whose ADHD persisted into adulthood had experienced at least one other comorbid disorder, compared to 47% of those whose ADHD did not persist. Additional concerns when an adult has ADHD include: Worse educational attainment, lower socioeconomic status, less likely to be employed, more likely to be divorced, and more likely to have non-alcohol-related substance abuse problems (Klein et al., 2012).

Causes of ADHD: Family and twin studies indicate that genetics play a significant role in the development of ADHD. Burt (2009), in a review of 26 studies, reported that the median rate of concordance for identical twins was .66, whereas the median concordance rate for fraternaltwinswas.20.The specific genes involved in ADHD are thought to include at least two that are important in the regulation of the neurotransmitter dopamine (Gizer, Ficks, & Waldman, 2009), suggesting that dopamine may be important in ADHD. Indeed, medications used in the treatment of ADHD, such as methylphenidate (Ritalin) and amphetamine with dextroamphetamine (Adderall), have stimulant qualities and elevate dopamine activity. People with ADHD show less dopamine activity in key regions of the brain, especially those associated with motivation and reward (Volkow et al., 2009), which provides support to the theory that dopamine deficits may be a vital factor in the development this disorder (Swansonetal.,2007).

Brain imaging studies have shown that children with ADHD exhibit abnormalities in their frontal lobes, an area in which dopamine is in abundance. Compared to children without ADHD, those with ADHD appear to have smaller frontal lobe volume, and they show less frontal lobe activation when performing mental tasks. Recall that one of the functions of the frontal lobes is to inhibit our behavior. Thus, abnormalities in this region may go a

long way toward explaining the hyperactive, uncontrolled behavior of ADHD.

Many parents attribute their child's hyperactivity to sugar. A statistical review of 16 studies, however, concluded that sugar consumption has no effect at all on the behavioral and cognitive performance of children (Wolraich, Wilson, & White, 1995). Additionally, although food additives have been shown to increase hyperactivity in non-ADHD children, the effect is rather small (McCann et al., 2007). Numerous studies, however, have shown a significant relationship between exposure to nicotine in cigarette smoke during the prenatal period and ADHD (Linnet et al., 2003). Maternal smoking during pregnancy is associated with the development of more severe symptoms of the disorder (Thakur et al., 2013).

Treatment for ADHD: Recommended treatment for ADHD includes behavioral interventions, cognitive behavioral therapy, parent and teacher education, recreational programs, and lifestyle changes, such as getting more sleep (Clay, 2013). For some children medication is prescribed. Parents are often concerned that stimulant medication may result in their child acquiring a substance use disorder. However, research using longitudinal studies has demonstrated that children diagnosed with ADHD who received pharmacological treatment had a lower risk for substance abuse problems than those children who did not receive medication (Wilens, Fararone, Biederman,&Gunawardene,2003). Theriskofsubstanceabuseproblemsappearstobeeven greater for those with ADHD who are un-medicated and also exhibit antisocial tendencies (Marshal & Molina, 2006).

Is the prevalence rate of ADHD increasing? Many people believe that the rates of ADHD have increased in recent years, and there is evidence to support this contention. In a recent study, investigators found that the parent-reported prevalence of ADHD among children (4–17 years old) in the United States increased by 22% during a 4-year period, from 7.8% in 2003 to 9.5% in 2007 (CDC, 2010). ADHD may be over-diagnosed by doctors who are too quick

to medicate children as a behavior treatment. There is also greater awareness of ADHD now than in the past. Nearly everyone has heard of ADHD, and most parents and teachers are aware of its key symptoms. Thus, parents may be quick to take their children to a doctor if they believe their child possesses these symptoms, or teachers may be more likely now than in the past to notice the symptoms and refer the child for evaluation. Further, the use of computers, video games, iPhones, and other electronic devices has become pervasive among children in the early 21st century, and these devices could potentially shorten children's attentions spans. Thus, what might seem like inattention to some parents and teachers could simply reflect exposure to too much technology.

Children with Disabilities: Legislation

Since the 1970s political and social attitudes have moved increasingly toward including people with disabilities into a wide variety of "regular" activities. In the United States, the shift is illustrated clearly in the Federal legislation that was enacted during this time. Three major laws were passed that guaranteed the rights of persons with disabilities, and of children and students with disabilities in particular. The third law has had the biggest impact on education.

Rehabilitation Act of 1973, Section 504: This law, the first of its kind, required that individuals with disabilities be accommodated in any program or activity that receives Federal funding (PL 93-112, 1973). Although this law was not intended specifically for education, in practice it has protected students' rights in some extra-curricular activities (for older students) and in some child care or after-school care programs (for younger students). If those programs receive Federal funding of any kind, the programs are not allowed to exclude children or youths with disabilities, and they have to find reasonable ways to accommodate the individuals' disabilities.

Americans with Disabilities Act of 1990 (or ADA): This legislation also prohibited discrimination on the basis of disability, just as Section 504 of the Rehabilitation Act had done (PL 101-336, 1990). Although the ADA also applies to all people (not just to students), its provisions are more specific and "stronger" than those of Section 504. In particular, ADA extends to all employment and jobs, not just those receiving Federal funding. It also specifically requires accommodations to be made in public facilities such as with buses, restrooms, and telephones. ADA legislation is therefore responsible for some of the "minor" renovations in schools that you may have noticed in recent years, like wheelchair-accessible doors, ramps, and restrooms, and public telephones with volume controls.

Individuals with Disabilities Education Act (or IDEA): As its name implied this legislation was more focused on education than either Section 504 or ADA. It was first passed in 1975 and has been amended several times since, including most recently in 2004 (PL 108-446, 2004). In its current form, the law guarantees the following rights related to education for anyone with a disability from birth to age 21. The first two influence schooling in general, but the last three affect the work of classroom teachers rather directly:

- *Free, appropriate education*: An individual or an individual's family should not have to pay for education simply because the individual has a disability, and the educational program should be truly educational; i.e., not merely care-taking or babysitting the person.
- *Due process*: In case of disagreements between an individual with a disability and the schools or other professionals, there must be procedures for resolving the disagreements that are fair and accessible to all parties, including the person himself or herself or the person's representative.
- *Fair evaluation of performance in spite of disability*: Tests or other evaluations should not assume test taking skills that a person with a disability cannot reasonably be expected to have, such as holding a pencil, hearing or seeing questions, working

quickly, or understanding and speaking orally. Evaluation procedures should be modified to allow or these differences. This provision of the law applies both to evaluations made by teachers and to school-wide or "high-stakes" testing programs.

- *Education in the "least restrictive environment"*: Education for someone with a disability should provide as many educational opportunities and options for the person as possible, both in the short term and in the long term. In practice this requirement has meant including students in regular classrooms and school activities as much as possible, though often not totally.
- *An individualized educational program:* Given that every disability is unique, instructional planning for a person with a disability should be unique or individualized as well. In practice this provision has led to classroom teachers planning individualized programs jointly with other professionals (like reading specialists, psychologists, or medical personnel) as part of a team.

Evaluation and diagnosis can be the first step in helping provide children with disabilities the type of instruction and resources that will benefit them educationally, but diagnosis and labeling also have social implications. It is important to consider that children can be misdiagnosed and that once a child has received a diagnostic label, the child, teachers, and family members may tend to interpret actions of the child through that label. The label can also influence the child's self-concept. Consider, for example, a child who is misdiagnosed as learning disabled. That child may expect to have difficulties in school, lack confidence, and because of these expectations experience trouble. This **self-fulfilling prophecy** *or tendency to act in such a way as to make what you predict will happen, will come true.* This calls our attention to the power that labels can have whether or not they are accurately applied. It is also important to consider that children's difficulties can change over

time; a child who has problems in school, may improve later or may live under circumstances as an adult where the problem (such as a delay in math skills or reading skills) is no longer relevant. That person, however, will still have a label as learning disabled. It should be recognized that the distinction between abnormal and normal behavior is not always clear; some abnormal behavior in children is fairly common.

5.11: Socioemotional Development in Middle and Late Childhood

Learning Objectives: Socioemotional Development in Middle and Late Childhood

- Describe Erikson's fourth stage of industry vs. inferiority
- Describe the changes in self-concept, self-esteem, and self-efficacy
- Explain Kohlberg's stages of moral development
- Describe the importance of peers, the stages of friendships, peer acceptance, and the consequences of peer acceptance
- Describe bullying, cyberbullying and the consequences of bullying
- Identify the types of families where children reside
- Identify the five family tasks
- Explain the consequences of divorce on children
- Describe the effects of cohabitation and remarriage on children
- Describe the characteristics and developmental stages of blended families

Erikson: Industry vs. Inferiority

According to Erikson, children in middle and late childhood are very busy or industrious (Erikson, 1982). They are constantly doing, planning, playing, getting together with friends, and achieving. This is a very active time, and a time when they are gaining a sense of how they measure up when compared with peers. 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 and late childhood.

Self-Understanding

Self-concept *refers to beliefs about general personal identity* (Seiffert, 2011). These beliefs include personal attributes, such as one's age, physical characteristics, behaviors, and competencies. Children in middle and late childhood have a more realistic sense of self than do those in early childhood, and they better understand their strengths and weaknesses. This can be attributed to greater experience in comparing their own performance with that of others, and to greater cognitive flexibility. Children in middle and late childhood are also able to include other peoples' appraisals of them into their self-concept, including parents, teachers, peers, culture, and media. Internalizing others' appraisals and creating social comparison affect children's **self-esteem**, *which is defined as an evaluation of one's identity*. Children can have individual assessments of how well they perform a variety of activities and also develop an overall global self-assessment. If there is a discrepancy between how children view themselves and what they consider to be their ideal selves, their self-esteem can be negatively affected.



Figure 5.20: Hopefully these children have self-efficacy about playing the violin.

Another important development in self-understanding is **self-efficacy**, *which is the belief that you are capable of carrying out a specific task or of reaching a specific goal* (Bandura, 1977, 1986, 1997). Large discrepancies between self-efficacy and ability can create motivational problems for the individual (Seifert, 2011). If a student believes that he or she can solve mathematical problems, then the student is more likely to attempt the mathematics homework that the teacher assigns. Unfortunately, the converse is also true. If a student believes that he or she is incapable of math, then the student is less likely to attempt the math homework regardless of the student's actual ability in math. Since self-efficacy is self-constructed, it is possible for students to miscalculate or misperceive their true skill, and these misperceptions can have complex effects on students' motivations. It is possible to have either too much or too little self-efficacy, and according to Bandura

(1997) the optimum level seems to be either at, or slightly above, true ability.

5.12: Kohlberg's Stages of Moral Development

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. Just as Piaget believed that children's cognitive development follows specific patterns, Kohlberg (1984) argued that we learn our moral values through active thinking and reasoning, and that moral development follows a series of stages. Kohlberg's six stages are generally organized into three levels of moral reasons. To study moral development, Kohlberg posed moral dilemmas to children, teenagers, and adults, such as the following:

A man's wife is dying of cancer and there is only one drug that can save her. The only place to get the drug is at the store of a pharmacist who is known to overcharge people for drugs. The man can only pay $1,000, but the pharmacist wants $2,000, and refuses to sell it to him for less, or to let him pay later. Desperate, the man later breaks into the pharmacy and steals the medicine. Should he have done that? Was it right or wrong? Why? (Kohlberg, 1984)

- **Level One-Preconventional Morality:** In stage one, moral reasoning is based on concepts of punishment. The child believes that if the consequence for an action is punishment, then the action was wrong. In the second stage, the child bases his or her thinking on self-interest and reward. "You scratch my back, I'll scratch yours." 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. 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 **preconventional morality.** *Preconventional morality focuses on self-interest. Punishment is avoided and rewards are sought.* Adults can also fall into these stages, particularly when they are under pressure.

- **Level Two-Conventional Morality:** Those tested who based their answers on what other people would think of the man as a result of his act, were placed in Level Two. For instance, they might say he should break into the store, and then everyone would think he was a good husband, or he should not because it is against the law. In either case, right and wrong is determined by what other people think. In stage three, the person wants to please others. At stage four, the person acknowledges the importance of social norms or laws and wants to be a good member of the group or society. A good decision is one that gains the approval of others or one that complies with the law. This he called **conventional morality**, *people care about the effect of their actions on others.* Some older children, adolescents, and adults use this reasoning.
- **Level Three-Postconventional Morality:** Right and wrong are based on social contracts established for the good of everyone and that can 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. Alternatively, 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 **postconventional 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 is the kind Supreme Court justices do all day when deliberating whether a law is moral or ethical, which requires being able to think abstractly. Often this is not accomplished until a person reaches adolescence or adulthood. In the fifth stage, laws are recognized as social contracts. The reasons for the laws, like justice, equality, and dignity, are used to evaluate decisions and interpret laws. In the sixth stage, individually determined universal ethical principles are weighed to make moral decisions. Kohlberg said that few people ever reach this stage. The six stages can be reviewed in Table 5.5.

***Table* 5.5: Lawrence Kohlberg's Levels of Moral Reasoning.**

Age	Moral Level	Description
Young children-usually prior to age 9	Preconventional morality	**Stage 1:** Focus is on self-interest, and punishment is avoided. The man shouldn't steal the drug, as he may get caught and go to jail. **Stage 2:** Rewards are sought. A person at this level will argue that the man should steal the drug because he does not want to lose his wife who takes care of him.
Older children, adolescents, and most adults	Conventional morality	**Stage 3:** Focus is on how situational outcomes impact others and wanting to please and be accepted. The man should steal the drug because that is what good husbands do. **Stage 4:** People make decisions based on laws or formalized rules. The man should obey the law because stealing is a crime.
Rare with adolescents and few adults	Postconventional morality	**Stage 5:** Individuals employ abstract reasoning to justify behaviors. The man should steal the drug because laws can be unjust, and you have to consider the whole situation. **Stage 6:** Moral behavior is based on self-chosen ethical principles. The man should steal the drug because life is more important than property.

Although research has supported Kohlberg's idea that moral reasoning changes from an early emphasis on punishment and social rules and regulations to an emphasis on more general ethical principles, as with Piaget's approach, Kohlberg's stage model is probably too simple. For one, people may use higher levels of reasoning for some types of problems, but revert to lower levels in situations where doing so is more consistent with their goals or beliefs (Rest, 1979). Second, it has been argued that the stage model is particularly appropriate for Western, rather than non-Western, samples in which allegiance to social norms, such as respect for

authority, may be particularly important (Haidt, 2001). In addition, there is frequently little correlation between how we score on the moral stages and how we behave in real life.

Perhaps the most important critique of Kohlberg's theory is that it may describe the moral development of males better than it describes that of females. Gilligan (1982) has argued that, because of differences in their socialization, males tend to value principles of justice and rights, whereas females value caring for and helping others. Although there is little evidence for a gender difference in Kohlberg's stages of moral development (Turiel, 1998), it is true that girls and women tend to focus more on issues of caring, helping, and connecting with others than do boys and men (Jaffee & Hyde, 2000).

5.13: Friends and Peers

As toddlers, children may begin to show a preference for certain playmates (Ross & Lollis, 1989). However, peer interactions at this age often involve more parallel play rather than intentional social interactions (Pettit, Clawson, Dodge, & Bates, 1996). By age four, many children use the word "friend" when referring to certain children, and do so with a fair degree of stability (Hartup, 1983). However, among young children "friendship" is often based on proximity, such as they live next door, attend the same school, or it refers to whomever they just happen to be playing with at the time (Rubin, 1980).

Friendships take on new importance as judges of one's worth, competence, and attractiveness in middle and late childhood. Friendships provide the opportunity for learning social skills, such as how to communicate with others and how to negotiate differences. Children get ideas from one another about how to perform certain tasks, how to gain popularity, what to wear or say, and how to act. This society of children marks a transition from a life focused on the family to a life concerned with peers. During middle and late childhood, peers increasingly play an important role. For example, peers play a key role in a child's self-esteem at this age as any parent who has tried to console a rejected child will tell you. No matter how complimentary and encouraging the parent may be, being rejected by friends can only be remedied by renewed acceptance. Children's conceptualization of what makes someone a "friend" changes from a more egocentric understanding to one based on mutual trust and commitment. Both Bigelow (1977) and Selman (1980) believe that these changes are linked to advances in cognitive development.



Figure 5.21: Friendships in young children.

Bigelow and La Gaipa (1975) outline three stages to children's conceptualization of friendship. In stage one, **reward-cost**, friendship *focuses on mutual activities*. Children in early, middle, and late childhood all emphasize similar interests as the main characteristics of a good friend. Stage two, **normative expectation**, *focuses on conventional morality; that is, the emphasis is on a friend as someone who is kind and shares with you.* Clark and Bittle (1992) found that fifth graders emphasized this in a friend more than third or eighth graders. In the final stage, **empathy and understanding**, *friends are people who are loyal, committed to the relationship, and share intimate information.* Clark and Bittle (1992) reported eighth graders emphasized this more in a friend. They also found that as early as fifth grade, girls were starting to include a sharing of secrets, and not betraying confidences as crucial to someone who is a friend.

Selman (1980) outlines five stages of friendship from early childhood through to adulthood. In stage 0, **momentary physical interaction**, *a friend is someone who you are playing with at this point in time.* Selman notes that this is typical of children between the ages of three and six. These early friendships are based more

on circumstances (e.g., a neighbor) than on genuine similarities. In stage 1, **one-way assistance**, *a friend is someone who does nice things for you*, such as saving you a seat on the school bus or sharing a toy. However, children in this stage, do not always think about what they are contributing to the relationships. Nonetheless, having a friend is important and children will sometimes put up with a not so nice friend, just to have a friend. Children as young as five and as old as nine may be in this stage. In stage 2, **fair- weather cooperation**, children are very concerned with fairness and reciprocity, and thus, *a friend is someone returns a favor*. In this stage, if a child does something nice for a friend there is an expectation that the friend will do something nice for them at the first available opportunity. When this fails to happen, a child may break off the friendship. Selman found that some children as young as seven and as old as twelve are in this stage. In stage 3, **intimate and mutual sharing**, typically between the ages of eight and fifteen, *a friend is someone who you can tell them things you would tell no one else.* Children and teens in this stage no longer "keep score", and do things for a friend because they genuinely care for the person. If a friendship dissolves in the stage it is usually due to a violation of trust. However, children in this stage do expect their friend to share similar interests and viewpoints and may take it as a betrayal if a friend likes someone that they do not. In stage 4, **autonomous interdependence**, *a friend is someone who accepts you and that you accept as they are*. In this stage children, teens, and adults accept and even appreciate differences between themselves and their friends. They are also not as possessive, so they are less likely to feel threatened if their friends have other relationships or interests. Children are typically twelve or older in this stage.

Peer Relationships: Sociometric assessment *measures attraction between members of a group*, such as a classroom of students. In sociometric research children are asked to mention the three children they like to play with the most, and those they do not like to play with. The number of times a child is nominated for each of the two categories (like, do not like) is tabulated. **Popular**

children *receive many votes in the "like" category, and very few in the "do not like" category*. In contrast, **rejected children** *receive more unfavorable votes, and few favorable ones*. **Controversial children** *are mentioned frequently in each category*, with several children liking them and several children placing them in the do not like category. **Neglected children** *are rarely mentioned in either category*, and the **average child** *has a few positive votes with very few negative ones* (Asher & Hymel, 1981).



Figure 5.22: Some children are more popular than others.

Most children want to be liked and accepted by their friends. Some popular children are nice and have good social skills. These **popular-prosocial** children *tend to do well in school and are cooperative and friendly*. **Popular-antisocial** children may *gain popularity by acting tough or spreading rumors about others* (Cillessen & Mayeux, 2004). Rejected children are sometimes excluded because they are **rejected-withdrawn**. *These children are*

shy and withdrawn and are easy targets for bullies because they are unlikely to retaliate when belittled (Boulton, 1999). Other rejected children are **rejected-aggressive** and *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 only leads to behavior that brings further rejection from other children. Children who are not accepted are more likely to experience conflict, lack confidence, and have trouble adjusting (Klima & Repetti, 2008; Schwartz, Lansford, Dodge, Pettit, & Bates, 2014).

Bullying

According to Stopbullying.gov (2016), a federal government website managed by the U.S. Department of Health & Human Services, **Bullying** *is defined as unwanted, aggressive behavior among school aged children that involves a real or perceived power imbalance.* Further, the aggressive behavior happens more than once or has the potential to be repeated. There are different types of bullying, including verbal bullying, which is saying or writing mean things, teasing, name calling, taunting, threatening, or making inappropriate sexual comments. Social bullying, also referred to as relational bullying, involves spreading rumors, purposefully excluding someone from a group, or embarrassing someone on purpose. Physical Bullying involves hurting a person's body or possessions.

A more recent form of bullying is **Cyberbullying,** *which involves electronic technology*. Examples of cyberbullying include sending mean text messages or emails, creating fake profiles, and posting embarrassing pictures, videos or rumors on social networking sites. Children who experience cyberbullying have a harder time getting away from the behavior because it can occur any time of day and without being in the presence of others. Additional concerns of

cyberbullying include that messages and images can be posted anonymously, distributed quickly, and be difficult to trace or delete. Children who are cyberbullied are more likely to: experience in-person bullying, be unwilling to attend school, receive poor grades, use alcohol and drugs, skip school, have lower self-esteem, and have more health problems (Stopbullying.gov, 2016).

The National Center for Education Statistics and Bureau of Justice statistics indicate that in 2010-2011, 28% of students in grades 6-12 experienced bullying and 7% experienced cyberbullying. The 2013 Youth Risk Behavior Surveillance System, which monitors six types of health risk behaviors, indicate that 20% of students in grades 9-12 experienced bullying and 15% experienced cyberbullying (Stopbullying.gov, 2016).



Figure 5.23: Some students are at an increased risk for being bullied.

Those at risk for bullying: Bullying can happen to anyone, but some students are at an increased risk for being bullied including lesbian, gay, bisexual, transgendered (LGBT) youth, those with disabilities, and those who are socially isolated. Additionally, those who are

perceived as different, weak, less popular, overweight, or having low self-esteem, have a higher likelihood of being bullied.

Those who are more likely to bully: Bullies are often thought of as having low self-esteem, and then bully others to feel better about themselves. Although this can occur, many bullies in fact have high levels of self-esteem. They possess considerable popularity and social power and have well-connected peer relationships. They do not lack self-esteem, and instead lack empathy for others. They like to dominate or be in charge of others.

Bullied children often do not ask for help: Unfortunately, most children do not let adults know that they are being bullied. Some fear retaliation from the bully, while others are too embarrassed to ask for help. Those who are socially isolated may not know who to ask for help or believe that no one would care or assist them if they did ask for assistance. Consequently, it is important for parents and teacher to know the warning signs that may indicate a child is being bullied. These include: unexplainable injuries, lost or destroyed possessions, changes in eating or sleeping patterns, declining school grades, not wanting to go to school, loss of friends, decreased self-esteem and/or self-destructive behaviors.

5.14: Family Life

Family Tasks: One of the ways to assess the quality of family life is to consider the tasks of families. Berger (2014) lists five family functions:

- Providing food, clothing and shelter
- Encouraging learning
- Developing self-esteem
- Nurturing friendships with peers
- 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. Hopefully, the family will provide 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 as a child. The tasks of families listed above are functions that can be fulfilled in a variety of family types-not just intact, two-parent households.

Parenting Styles: As discussed in the previous chapter, parenting styles affect the relationship parents have with their children. During middle and late childhood, children spend less time with parents and more time with peers, and consequently parents may have to modify their approach to parenting to accommodate the child's growing independence. The authoritative style, which incorporates reason and engaging in joint decision-making whenever possible may be the most effective approach (Berk, 2007).

However, Asian-American, African-American, and Mexican-American parents are more likely than European-Americans to use an authoritarian style of parenting. This authoritarian style of parenting that using strict discipline and focuses on obedience is also tempered with acceptance and warmth on the part of the parents. Children raised in this manner tend to be confident, successful and happy (Chao, 2001; Stewart & Bond, 2002).

Living Arrangements: Certainly the living arrangements of children have changed significantly over the years. In 1960, 92% of children resided with married parents, while only 5% had parents who were divorced or separated and 1% resided with parents who had never been married. By 2008, 70% of children resided with married parents, 15% had parent who were divorced or separated, and by 2010, 14% resided with parents who had never married (Pew Research Center, 2010). By 2013 only 61% of children resided with married parents, and of those only 46% were being raised by both of their biological parents (Livingston, 2014).

Based on the 2010 United States Census, when just looking at households that contain spouses or unmarried partners with children, the majority of households with children are married, opposite sex couples (Lofquist, 2011). However, same sex couples have higher percentages of adopted children than opposite sex couples. Table 5.6 identifies the number of same sex and opposite sex households with children.

***Table* 5.6: 2010 Census**

	Total Households	
Households with children	25,233,794	
Biological only		
Step only or adopted only		
Combination		

Lesbian and Gay Parenting: Research has consistently shown that the children of lesbian and gay parents are as successful as those of heterosexual parents, and consequently efforts are being made to ensure that gay and lesbian couples are provided with the same legal rights as heterosexual couples when adopting children (American Civil Liberties Union, 2016).



Figure 5.24: Lesbian and gay parenting.

Patterson (2013) reviewed more than 25 years of social science research on the development of children raised by lesbian and gay parents and found no evidence of detrimental effects. In fact, research has demonstrated that children of lesbian and gay parents are as well-adjusted overall as those of heterosexual parents. Specifically, research comparing children based on parental sexual orientation has not shown any differences in the development of gender identity, gender role development, or sexual orientation. Additionally, there were no differences between the children of lesbian or gay parents and those of heterosexual parents in separation-individuation, behavior problems, self-concept, locus of control, moral judgment, school adjustment, intelligence,

victimization, and substance use. Further, research has consistently found that children and adolescents of gay and lesbian parents report normal social relationships with family members, peers, and other adults. Patterson concluded that there is no evidence to support legal discrimination or policy bias against lesbian and gay parents.

Divorce: Using families in the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development, Weaver and Schofield (2015) found that children from divorced families had significantly more behavior problems than those from a matched sample of children from non-divorced families. These problems were evident immediately after the separation and also in early and middle adolescence. An analysis of divorce factors indicated that children exhibited more externalizing behaviors if the family had fewer financial resources before the separation. It was hypothesized that the lower income and lack of educational and community resources contributed to the stress involved in the divorce. Additional factors contributing to children's behavior problems included a post-divorce home that was less supportive and stimulating, and a mother that was less sensitive and more depressed.

Additional concerns include that the child will grieve the loss of the parent they no longer see as frequently. The child may also grieve about other family members that are no longer available. Very often, divorce means a change in the amount of money coming into the household. Children experience new constraints on spending or entertainment. School-aged children, especially, may notice that they can no longer have toys, clothing or other items to which they have grown accustomed. Or it may mean that there is less eating out or being able to afford participation in extracurricular activities. The custodial parent may experience stress at not being able to rely on child support payments or having the same level of income as before. This can affect decisions regarding healthcare, vacations, rents, mortgages and other expenditures, and the stress can result in less happiness and relaxation in the home. The parent who has

to take on more work may also be less available to the children. Children may also have to adjust to other changes accompanying a divorce. The divorce might mean moving to a new home and changing schools or friends. It might mean leaving a neighborhood that has meant a lot to them as well.

Relationships of adult children of divorce are identified as more problematic than those adults from intact homes. For 25 years, Hetherington and Kelly (2002) followed children of divorce and those whose parents stayed together. The results indicated that 25% of adults whose parents had divorced experienced social, emotional, or psychological problems compared with only 10% of those whose parents remained married. For example, children of divorce have more difficulty forming and sustaining intimate relationships as young adults, are more dissatisfied with their marriage, and consequently more likely to get divorced themselves (Arkowitz & Lilienfeld, 2013). One of the most commonly cited long-term effects of divorce is that children of divorce may have lower levels of education or occupational status. This may be a consequence of lower income and resources for funding education rather than to divorce per se. In those households where economic hardship does not occur, there may be no impact on long-term economic status (Drexler, 2005).

According to Arkowitz and Lilienfeld (2013), long-term harm from parental divorce is not inevitable, however, and children can navigate the experience successfully. A variety of factors can positively contribute to the child's adjustment. For example, children manage better when parents limit conflict, and provide warmth, emotional support and appropriate discipline. Further, children cope better when they reside with a well-functioning parent and have access to social support from peers and other adults. Those at a higher socioeconomic status may fare better because some of the negative consequences of divorce are a result of financial hardship rather than divorce per se (Drexler, 2005).

Although they may experience more problems than children from non-divorced families, most children of divorce lead happy, well-

adjusted lives and develop strong, positive relationships with their custodial parent (Seccombe & Warner, 2004). In the United States and Canada, most children reside with their mother in single-parent households (Berk, 2007). Children from single- parent families talk to their mothers more often than children of two-parent families (McLanahan & Sandefur, 1994). In a study of college-age respondents, Arditti (1999) found that increasing closeness and a movement toward more democratic parenting styles was experienced. Others have also found that relationships between mothers and children become closer and stronger (Guttman, 1993) and suggest that greater equality and less rigid parenting is beneficial after divorce (Steward, Copeland, Chester, Malley, & Barenbaum, 1997).

Certain characteristics of the child can also facilitate post-divorce adjustment. Specifically, children with an easygoing temperament, who problem-solve well, and seek social support manage better after divorce. A further protective factor for children is intelligence (Weaver & Schofield, 2015). Children with higher IQ scores appear to be buffered from the effects of divorce. Children may be given more opportunity to discover their own abilities and gain independence that fosters self-esteem. If divorce means a reduction in tension, the child may feel relief. Overall, not all children of divorce suffer negative consequences and should not be subjected to stigma or social disapproval (Hetherington & Kelly, 2002). Furstenberg and Cherlin (1991) believe that the primary factor influencing the way that children adjust to divorce is the way the custodial parent adjusts to the divorce. If that parent is adjusting well, the children will benefit. This may explain a good deal of the variation we find in children of divorce.

Is cohabitation and remarriage more difficult than divorce for the child? The remarriage of a parent may be a more difficult adjustment for a child than the divorce of a parent (Seccombe & Warner, 2004). Parents and children typically have different ideas of how the stepparent should act. Parents and stepparents are more likely to see the stepparent's role as that of parent. A more

democratic style of parenting may become more authoritarian after a parent remarries. Biological parents are more likely to continue to be involved with their children jointly when neither parent has remarried. They are least likely to jointly be involved if the father has remarried and the mother has not. Cohabitation can be difficult for children to adjust to because cohabiting relationships in the United States tend to be short-lived. About 50 percent last less than 2 years (Brown, 2000). The child who starts a relationship with the parent's live-in partner may have to sever this relationship later. Even in long-term cohabiting relationships, once it is over, continued contact with the child is rare.

Blended Families: About 60 percent of divorced parents remarry within a few years (Berk, 2007). Largely due to high rates of divorce and remarriage, we have seen the number of blended families in America grow considerably, although rates of remarriage are declining (Seccombe & Warner, 2004). Blended families are not new. In the 1700-1800s there were many blended families, but they were created because someone died and remarried. Most blended families today are a result of divorce and remarriage, and such origins lead to new considerations. Blended families are different from intact families and more complex in a number of ways that can pose unique challenges to those who seek to form successful blended family relationships (Visher & Visher, 1985). Children may be a part of two households, each with different rules that can be confusing.



Figure 5.25: Blended family.

Members in blended families may not be as sure that others care and may require more demonstrations of affection for reassurance. For example, stepparents expect more gratitude and acknowledgment from the stepchild than they would with a biological child. Stepchildren experience more uncertainty/insecurity in their relationship with the parent and fear the parents will see them as sources of tension. Stepparents may feel guilty for a lack of feelings they may initially have toward their partner's children. Children who are required to respond to the parent's new mate as though they were the child's "real" parent often react with hostility, rebellion, or withdrawal. This occurs especially if there has not been time for the relationship to develop.

5.15: Canadian Resources

Below are resources that provide the Canadian context related to middle and late childhood.

- Statistics Canada. (2021). *Bilingualism among Canadian children and youth.* https://www150.statcan.gc.ca/n1/en/pub/11-627-m/11-627-m2019090-eng.pdf?st=gXU4VekB
- Statistics Canada. (2017). *Physical activity of Canadian children and youth* [Infographic]. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2017034-eng.htm
- Statistics Canada. (2018). *Police-reported family violence in Canada*, 2017 [Infographic]. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2018054-eng.htm
- Statistics Canada. (2017). *Tackling obesity in Canada: Childhood obesity and excess weight rates in Canada* [Infographic]. https://www.canada.ca/en/public-health/services/publications/healthy-living/obesity-excess-weight-rates-canadian-children.html

5.16: Test your knowledge



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5.R: Conclusion and References

Conclusions

Middle childhood is a complex period of the life span. New understandings and social situations bring variety to children's lives as they form new strategies for the world ahead. We next turn our attention to adolescents.

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6: ADOLESCENCE

Learning Objectives: Physical Development in Adolescence

- Summarize the overall physical growth
- Describe the changes that occur during puberty
- Describe the changes in brain maturation
- Describe the changes in sleep
- Describe gender intensification
- Identify nutritional concerns
- Describe eating disorders
- Explain the prevalence, risk factors, and consequences of adolescent pregnancy

Adolescence is a period that begins with puberty and ends with the transition to adulthood (approximately ages 10–18). Physical changes associated with puberty are triggered by hormones. Changes happen at different rates in distinct parts of the brain and increase adolescents' propensity for risky behavior. Cognitive changes include improvements in complex and abstract thought. Adolescents' relationships with parents go through a period of redefinition in which adolescents become more autonomous. Peer relationships are important sources of support, but companionship during adolescence can also promote problem behaviors. Identity formation occurs as adolescents explore and commit to different roles and ideological positions. Because so much is happening in these years, psychologists have focused a great deal of attention on the period of adolescence.

6.1: Growth in Adolescence

Puberty *is a period of rapid growth and sexual maturation.* These changes begin sometime between eight and fourteen. Girls begin puberty at around ten years of age and boys begin approximately two years later. Pubertal changes take around three to four years to complete. Adolescents experience an overall physical growth spurt. *The growth proceeds from the extremities toward the torso. This is referred to as* **distalproximal development**. First the hands grow, then the arms, and finally the torso. The overall physical growth spurt results in 10–11 inches of added height and 50 to 75 pounds of increased weight. The head begins to grow sometime after the feet have gone through their period of growth. Growth of the head is preceded by growth of the ears, nose, and lips. The difference in these patterns of growth result in adolescents appearing awkward and out-of-proportion. As the torso grows, so does the internal organs. The heart and lungs experience dramatic growth during this period.

During childhood, boys and girls are quite similar in height and weight. However, gender differences become apparent during adolescence. From approximately age ten to fourteen, the average girl is taller, but not heavier, than the average boy. After that, the average boy becomes both taller and heavier, although individual differences are certainly noted. As adolescents physically mature, weight differences are more noteworthy than height differences. At eighteen years of age, those that are heaviest weigh almost twice as much as the lightest, but the tallest teens are only about 10% taller than the shortest (Seifert, 2012).

Both height and weight can certainly be sensitive issues for some teenagers. Most modern societies, and the teenagers in them, tend to favor relatively short women and tall men, as well as a somewhat thin body build, especially for girls and women. Yet, neither socially preferred height nor thinness is the destiny for many individuals.

Being overweight, in particular, has become a common, serious problem in modern society due to the prevalence of diets high in fat and lifestyles low in activity (Tartamella, Herscher, & Woolston, 2004). The educational system has, unfortunately, contributed to the problem as well by gradually restricting the number of physical education courses and classes in the past two decades.

Average height and weight are also related somewhat to racial and ethnic background. In general, children of Asian background tend to be slightly shorter than children of European and North American background. The latter in turn tend to be shorter than children from African societies (Eveleth & Tanner, 1990). Body shape differs slightly as well, though the differences are not always visible until after puberty. Asian background youth tend to have arms and legs that are a bit short relative to their torsos, and African background youth tend to have relatively long arms and legs. The differences are only averages as there are large individual differences as well.

Sexual Development

Typically, the growth spurt is followed by the development of sexual maturity. Sexual changes are divided into two categories: Primary sexual characteristics and secondary sexual characteristics. **Primary sexual characteristics** *are changes in the reproductive organs*. For males, this includes growth of the testes, penis, scrotum, and **spermarche** *or first ejaculation of semen.* This occurs between 11 and 15 years of age. For females, primary characteristics include growth of the uterus and **menarche** *or the first menstrual period.* The female gametes, which are stored in the ovaries, are present at birth, but are immature. Each ovary contains about 400,000 gametes, but only 500 will become mature eggs (Crooks & Baur, 2007). Beginning at puberty, one ovum ripens and is released about every 28 days during the menstrual cycle. Stress and higher percentage of body fat can bring menstruation at younger ages.

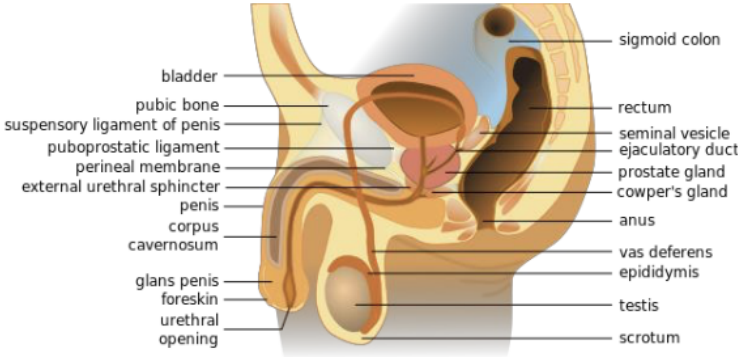


Figure 6.1: Male reproductive system.

Male Anatomy: Males have both internal and external genitalia that are responsible for procreation and sexual intercourse. Males produce their sperm on a cycle, and unlike the female's ovulation cycle, the male sperm production cycle is constantly producing millions of sperm daily. The main male sex organs are the penis and the testicles, the latter of which produce semen and sperm. The semen and sperm, as a result of sexual intercourse, can fertilize an ovum in the female's body; the fertilized ovum (zygote) develops into a fetus which is later born as a child.



Figure 6.2: Female reproductive system.

Female Anatomy: Female external genitalia is collectively known as the vulva, which includes the mons veneris, labia majora, labia minora, clitoris, vaginal opening, and urethral opening. Female internal reproductive organs consist of the vagina, uterus, fallopian tubes, and ovaries. The uterus hosts the developing fetus, produces vaginal and uterine secretions, and passes the male's sperm through to the fallopian tubes while the ovaries release the eggs. A female is born with all her eggs already produced. The vagina is attached to the uterus through the cervix, while the uterus is attached to the ovaries via the fallopian tubes. Females have a monthly reproductive cycle; at certain intervals the ovaries release an egg, which passes through the fallopian tube into the uterus. If, in this transit, it meets with sperm, the sperm might penetrate and merge with the egg, fertilizing it. If not fertilized, the egg is flushed out of the system through menstruation.



Figure 6.3: First time shaving.

Secondary sexual characteristics *are visible physical changes not directly linked to reproduction, but signal sexual maturity*. For males this includes broader shoulders and a lower voice as the larynx grows. Hair becomes coarser and darker, and hair growth occurs in the pubic area, under the arms and on the face. For females breast development occurs around age 10, although full development takes several years. Hips broaden and pubic and underarm hair develops and also becomes darker and coarser.

Acne: An unpleasant consequence of the hormonal changes in puberty is **acne**, defined *as pimples on the skin due to overactive sebaceous (oil-producing) glands* (Dolgin, 2011). These glands develop at a greater speed than the skin ducts that discharges the oil. Consequently, the ducts can become blocked with dead skin and acne will develop. According to the University of California at Los Angeles Medical Center (2000), approximately 85% of adolescents develop acne, and boys develop acne more than girls because of greater levels of testosterone in their systems (Dolgin, 2011). Experiencing acne can lead the adolescent to withdraw socially, especially if they are self-conscious about their skin or teased (Goodman, 2006).

Effects of Pubertal Age: The age of puberty is getting younger for children throughout the world. According to Euling et al. (2008) data are sufficient to suggest a trend toward an earlier breast development onset and menarche in girls. A century ago the average age of a girl's first period in the United States and Europe was 16,

while today it is around 13. Because there is no clear marker of puberty for boys, it is harder to determine if boys are maturing earlier too. In addition to better nutrition, less positive reasons associated with early puberty for girls include increased stress, obesity, and endocrine disrupting chemicals.

Cultural differences are noted with Asian-American girls, on average, developing last, while African American girls enter puberty the earliest. Hispanic girls start puberty the second earliest, while European-American girls rank third in their age of starting puberty. Although African- American girls are typically the first to develop, they are less likely to experience negative consequences of early puberty when compared to European-American girls (Weir, 2016).

Research has demonstrated mental health problems linked to children who begin puberty earlier than their peers. For girls early puberty is associated with depression, substance use, eating disorders, disruptive behavior disorders, and early sexual behavior (Graber, 2013). Early maturing girls demonstrate more anxiety and less confidence in their relationships with family and friends, and they compare themselves more negatively to their peers (Weir, 2016).

Problems with early puberty seem to be due to the mismatch between the child's appearance and the way she acts and thinks. Adults especially may assume the child is more capable than she actually is, and parents might grant more freedom than the child's age would indicate. For girls, the emphasis on physical attractiveness and sexuality is emphasized at puberty and they may lack effective coping strategies to deal with the attention they may receive.



Figure 6.4: Puberty.

Additionally, mental health problems are more likely to occur when the child is among the first in his or her peer group to develop. Because the preadolescent time is one of not wanting to appear different, early developing children stand out among their peer group and gravitate toward those who are older. For girls, this results in them interacting with older peers who engage in risky behaviors such as substance use and early sexual behavior (Weir, 2016).

Boys also see changes in their emotional functioning at puberty. According to Mendle, Harden, Brooks-Gunn, and Graber (2010), while most boys experienced a decrease in depressive symptoms during puberty, boys who began puberty earlier and exhibited a rapid tempo, or a fast rate of change, actually increased in depressive symptoms. The effects of pubertal tempo were stronger than those of pubertal timing, suggesting that rapid pubertal change in boys may be a more important risk factor than the timing of development. In a further study to better analyze the reasons for this change, Mendle, Harden, Brooks-Gunn and Graber (2012) found that both early maturing boys and rapidly maturing boys displayed decrements in the quality of their peer relationships as they moved into early adolescence, whereas boys with more typical timing and tempo development actually experienced improvements in peer relationships. The researchers concluded that the transition in peer

relationships may be especially challenging for boys whose pattern of pubertal maturation differs significantly from those of others their age. Consequences for boys attaining early puberty was increased odds of cigarette, alcohol, or other drug use (Dudovitz, et al., 2015).



Figure 6.5: Effects of puberty on boys.

Gender Role Intensification: At about the same time that puberty accentuates gender, role differences also accentuate for at least some teenagers. Some girls who excelled at math or science in elementary school, may curb their enthusiasm and displays of success at these subjects for fear of limiting their popularity or attractiveness as girls (Taylor, Gilligan, & Sullivan, 1995; Sadker, 2004). Some boys who were not especially interested in sports previously may begin dedicating themselves to athletics to affirm their masculinity in the eyes of others. Some boys and girls who once worked together successfully on class projects may no longer feel comfortable doing so, or alternatively may now seek to be working partners, but for social rather than academic reasons. Such changes do not affect all youngsters equally, nor affect any one youngster equally on all occasions. An individual student may act like a young adult on one day, but more like a child the next.

6.2: Adolescent Brain

The brain undergoes dramatic changes during adolescence. Although it does not get larger, it matures by becoming more interconnected and specialized (Giedd, 2015). The myelination and development of connections between neurons continues. This results in an increase in the white matter of the brain, and allows the adolescent to make significant improvements in their thinking and processing skills. Different brain areas become myelinated at different times. For example, the brain's language areas undergo myelination during the first 13 years. Completed insulation of the axons consolidates these language skills, but makes it more difficult to learn a second language. With greater myelination, however, comes diminished plasticity as a myelin coating inhibits the growth of new connections (Dobbs, 2012).

Even as the connections between neurons are strengthened, synaptic pruning occurs more than during childhood as the brain adapts to changes in the environment. This synaptic pruning causes the gray matter of the brain, or the cortex, to become thinner but more efficient (Dobbs, 2012). The corpus callosum, which connects the two hemispheres, continues to thicken allowing for stronger connections between brain areas. Additionally, the hippocampus becomes more strongly connected to the frontal lobes, allowing for greater integration of memory and experiences into our decision making.

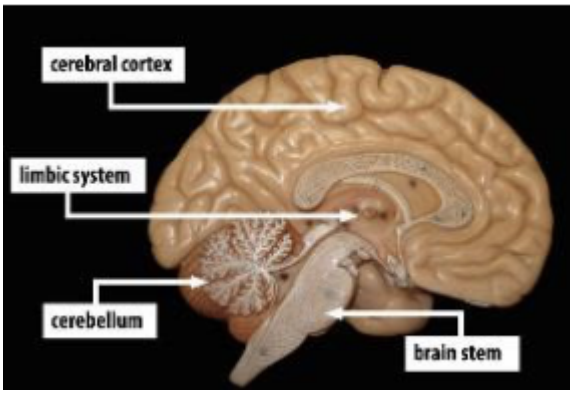


Figure 6.6: The limbic system.

The **limbic system**, *which regulates emotion and reward*, is linked to the hormonal changes that occur at puberty. The limbic system is also related to novelty seeking and a shift toward interacting with peers. In contrast, the **prefrontal cortex** *which is involved in the control of impulses, organization, planning, and making good decisions*, does not fully develop until the mid-20s. According to Giedd (2015) the significant aspect of the later developing prefrontal cortex and early development of the limbic system is the "mismatch" in timing between the two. The approximately ten years that separates the development of these two brain areas can result in risky behavior, poor decision making, and weak emotional control for the adolescent. When puberty begins earlier, this mismatch extends even further.

Teens often take more risks than adults and according to research it is because they weigh risks and rewards differently than adults do (Dobbs, 2012). For adolescents the brain's sensitivity to the neurotransmitter dopamine peaks, and **dopamine** *is involved in reward circuits* so the possible rewards outweighs the risks. Adolescents respond especially strongly to social rewards during activities, and they prefer the company of others their same age. In addition to dopamine, the adolescent brain is affected by **oxytocin** *which facilitates bonding and makes social connections more rewarding*. With both dopamine and oxytocin engaged, it is no

wonder that adolescents seek peers and excitement in their lives that could end up actually harming them.

Because of all the changes that occur in the adolescent brain, the chances for abnormal development can occur, including mental illness. In fact, 50% of the mental illness occurs by the age 14 and 75% occurs by age 24 (Giedd, 2015). Additionally, during this period of development the adolescent brain is especially vulnerable to damage from drug exposure. For example, repeated exposure to marijuana can affect cellular activity in the endocannabinoid system. Consequently, adolescents are more sensitive to the effects of repeated marijuana exposure (Weir, 2015).

However, researchers have also focused on the highly adaptive qualities of the adolescent brain which allow the adolescent to move away from the family towards the outside world (Dobbs, 2012; Giedd, 2015). Novelty seeking and risk taking can generate positive outcomes including meeting new people and seeking out new situations. Separating from the family and moving into new relationships and different experiences are actually quite adaptive for society.

6.3: Adolescent Sleep

According to the National Sleep Foundation (NSF) (2016), adolescents need about 8 to 10 hours of sleep each night to function best. The most recent Sleep in America poll in 2006 indicated that adolescents between sixth and twelfth grade were not getting the recommended amount of sleep. On average adolescents only received 7 1⁄2 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 (NSF, 2016). Additionally, they are at risk for substance abuse, car crashes, poor academic performance, obesity, and a weakened immune system (Weintraub, 2016).



Figure 6.7: Adolescents often do not get enough 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 adolescent 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.

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.

6.4: Adolescent Sexual Activity

By about age ten or eleven, most children experience increased sexual attraction to others that affects social life, both in school and out (McClintock & Herdt, 1996). By the end of high school, more than half of boys and girls report having experienced sexual intercourse at least once, though it is hard to be certain of the proportion because of the sensitivity and privacy of the information. (Center for Disease Control, 2004; Rosenbaum, 2006).

Adolescent Pregnancy: Although adolescent pregnancy rates have declined since 1991, teenage birth rates in the United States are higher than most developed countries.

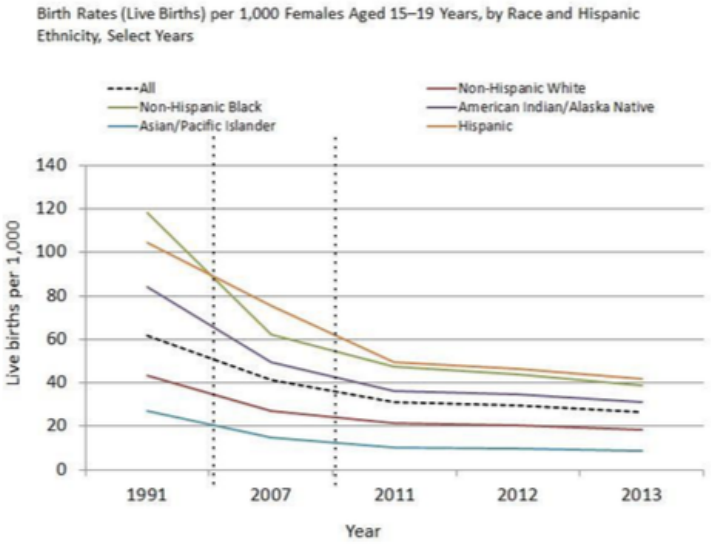


Figure 6.8: Live births rates over the years by ethnicity.

In 2014 females aged 15–19 years experienced a birth rate of 24.2 per

1,000 women. This is a drop of 9% from 2013. Birth rates fell 11% for those aged 15–17 years and 7% for 18–19 year-olds. It appears that adolescents seem to be less sexually active than in previous years, and those who are sexually active seem to be using birth control (CDC, 2016). Figure 6.8 shows the birth rates (live births) per 1,000 females aged 15–19 years for all races and Hispanic ethnicity in the United States, 1991, 2007, 2011, 2012, & 2013.

Risk Factors for Adolescent Pregnancy: Miller, Benson, and Galbraith (2001) found that parent/child closeness, parental supervision, and parents' values against teen intercourse (or unprotected intercourse) decreased the risk of adolescent pregnancy. In contrast, residing in disorganized/dangerous neighborhoods, living in a lower SES family, living with a single parent, having older sexually active siblings or pregnant/parenting teenage sisters, early puberty, and being a victim of sexual abuse place adolescents at an increased risk of adolescent pregnancy.

Consequences of Adolescent Pregnancy: After the child is born life can be difficult for a teenage mother. Only 40% of teenagers who have children before age 18 graduate from high school. Without a high school degree her job prospects are limited and economic independence is difficult. Teen mothers are more likely to live in poverty, and more than 75% of all unmarried teen mother receive public assistance within 5 years of the birth of their first child. Approximately, 64% of children born to an unmarried teenage high-school dropout live in poverty. Further, a child born to a teenage mother is 50% more likely to repeat a grade in school and is more likely to perform poorly on standardized tests and drop out before finishing high school (March of Dimes, 2012).

Research analyzing the age that men father their first child and how far they complete their education have been summarized by the Pew Research Center (2015) and reflect the research for females. Among dads ages 22 to 44, 70% of those with less than a high school diploma say they fathered their first child before the age of 25. In comparison, less than half (45%) of fathers with some college experience became dads by that age. Additionally, becoming

a young father occurs much less for those with a bachelor's degree or higher as just 14% had their first child prior to age 25. Like men, women with more education are likely to be older when they become mothers.

6.5: Eating Disorders

Although eating disorders can occur in children and adults, they frequently appear during the teen years or young adulthood (National Institute of Mental Health (NIMH), 2016). Eating disorders affect both genders, although rates among women are 2 1/2 times greater than among men. Similar to women who have eating disorders, men also have a distorted sense of body image, including muscle dysmorphia or an extreme concern with becoming more muscular. The prevalence of eating disorders in the United States is similar among Non-Hispanic Whites, Hispanics, African-Americans, and Asians, with the exception that anorexia nervosa is more common among Non-Hispanic Whites (Hudson, Hiripi, Pope, & Kessler, 2007; Wade, Keski-Rahkonen, & Hudson, 2011).

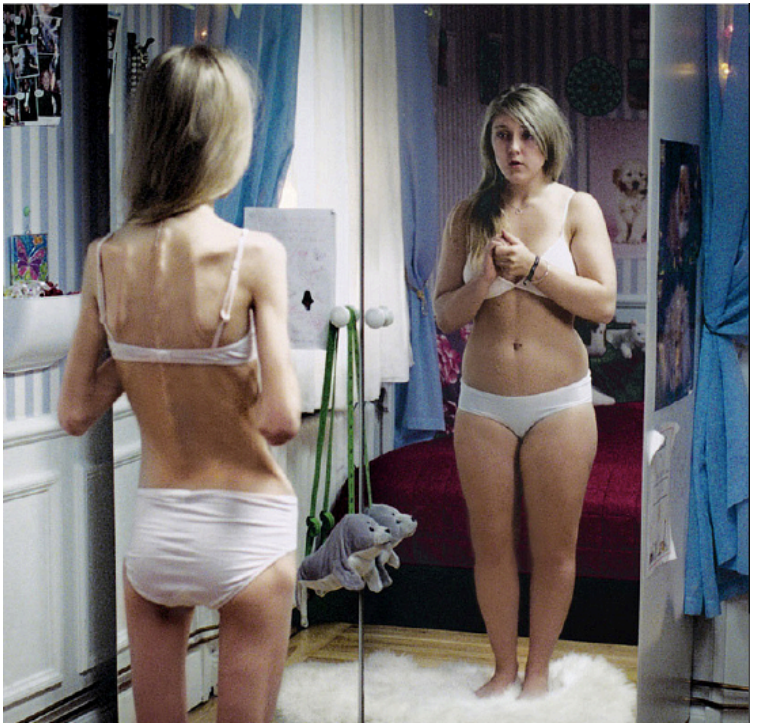


Figure 6.9: Eating disorders involve a distorted sense of body image.

Risk Factors for Eating Disorders

Because of the high mortality rate, researchers are looking into the etiology of the disorder and associated risk factors. Researchers are finding that eating disorders are caused by a complex interaction of genetic, biological, behavioral, psychological, and social factors (NIMH, 2016). Eating disorders appear to run in families, and researchers are working to identify DNA variations that are linked to the increased risk of developing eating disorders. Researchers have also found differences in patterns of brain activity in women with eating disorders in comparison with healthy women.

The main criteria for the most common eating disorders: Anorexia

nervosa, bulimia nervosa, and binge-eating disorder are described in the Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition (DSM-5)(American Psychiatric Association, 2013) and listed in Table 6.1.

Anorexia Nervosa	• Restriction of energy intake, leading to • Intense fear of gaining weight • Disturbance in one's self-evaluation reg
Bulimia Nervosa	• Recurrent episodes of binge-eating • Recurrent inappropriate compensatory • Self-evaluation is unduly affected by bo
Binge-Eating Disorder	• Recurrent episodes of binge eating • Marked distress regarding binge eating • The binge eating is not associated with

Health Consequences of Eating Disorders: For those suffering from anorexia, health consequences include an abnormally slow heart rate and low blood pressure, which increases the risk for heart failure. Additionally, there is a reduction in bone density (osteoporosis), muscle loss and weakness, severe dehydration, fainting, fatigue, and overall weakness. Anorexia nervosa has the highest mortality rate of any psychiatric disorder (Arcelus, Mitchell, Wales, & Nielsen, 2011). Individuals with this disorder may die from complications associated with starvation, while others die of

suicide. In women, suicide is much more common in those with anorexia than with most other mental disorders.

The binge and purging cycle of bulimia can affect the digestives system and lead to electrolyte and chemical imbalances that can affect the heart and other major organs. Frequent vomiting can cause inflammation and possible rupture of the esophagus, as well as tooth decay and staining from stomach acids. Lastly, binge eating disorder results in similar health risks to obesity, including high blood pressure, high cholesterol levels, heart disease, Type II diabetes, and gall bladder disease (National Eating Disorders Association, 2016).

Eating Disorders Treatment: To treat eating disorders, adequate nutrition and stopping inappropriate behaviors, such as purging, are the foundations of treatment. Treatment plans are tailored to individual needs and include medical care, nutritional counseling, medications (such as antidepressants), and individual, group, and/or family psychotherapy (NIMH, 2016). For example, the **Maudsley Approach** *has parents of adolescents with anorexia nervosa be actively involved their child's treatment*, such as assuming responsibility for feeding the child. To eliminate binge-eating and purging behaviors, **cognitive behavioral therapy (CBT)** *assists sufferers by identifying distorted thinking patterns and changing inaccurate beliefs.*



Figure 6.10: The Maudsley Family-Based treatment.

6.6: Cognitive Development in Adolescence

Learning Objectives: Cognitive Development in Adolescence

- Describe Piaget's formal operational stage and the characteristics of formal operational thought
- Describe adolescent egocentrism
- Describe Information Processing research on attention and memory
- Describe the developmental changes in language
- Describe the various types of adolescent education
- Identify changes in high school drop-out rates based on gender and ethnicity

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 beauty, love, freedom, and morality. The adolescent is no longer limited by what can be directly seen or heard. Additionally, while younger children solve problems through trial and error, adolescents demonstrate **hypothetical-deductive reasoning**, *which is developing hypotheses based on what might logically occur*. They 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). 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.

Adolescent Egocentrism: Once adolescents can understand abstract thoughts, they enter a world of hypothetical possibilities and demonstrate **egocentrism** *or a heightened self-focus*. The egocentricity comes from attributing unlimited power to their own thoughts (Crain, 2005). Piaget believed it was not until adolescents took on adult roles that they would be able to learn the limits to their own thoughts.

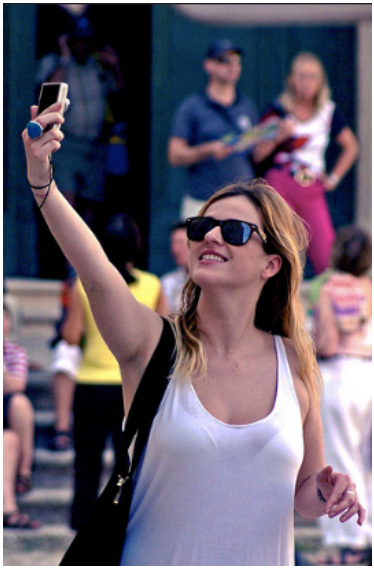


Figure 6.11: Adolescent egocentricity.

David Elkind (1967) expanded on the concept of Piaget's adolescent egocentricity. Elkind theorized that the physiological changes that occur during adolescence result in adolescents being primarily concerned with themselves. Additionally, since adolescents fail to differentiate between what others are thinking and their own thoughts, they believe that others are just as fascinated with their behavior and appearance. This belief results in the adolescent anticipating the reactions of others, and consequently constructing an imaginary audience. "The **imaginary audience** *is the adolescent's belief that those around them are as concerned and focused on their appearance as they themselves are*" (Schwartz, Maynard, & Uzelac, 2008, p. 441). Elkind thought that the imaginary audience contributed to the self-consciousness that occurs during early adolescence. The desire for privacy and reluctance to share personal information may be a further reaction to feeling under constant observation by others.

Another important consequence of adolescent egocentrism is the **personal fable** *or belief that one is unique, special, and invulnerable*

to harm. Elkind (1967) explains that because adolescents feel so important to others (imaginary audience) they regard themselves and their feelings as being special and unique. Adolescents believe that only they have experienced strong and diverse emotions, and therefore others could never understand how they feel. This uniqueness in one's emotional experiences reinforces the adolescent's belief of invulnerability, especially to death. Adolescents will engage in risky behaviors, such as drinking and driving or unprotected sex, and feel they will not suffer any negative consequences. Elkind believed that adolescent egocentricity emerged in early adolescence and declined in middle adolescence, however, recent research has also identified egocentricity in late adolescence (Schwartz, et al., 2008).

Consequences of Formal Operational Thought: As adolescents are now able to think abstractly and hypothetically, they exhibit many new ways of reflecting on information (Dolgin, 2011). For example, they demonstrate greater **introspection** *or thinking about one's thoughts.*

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.

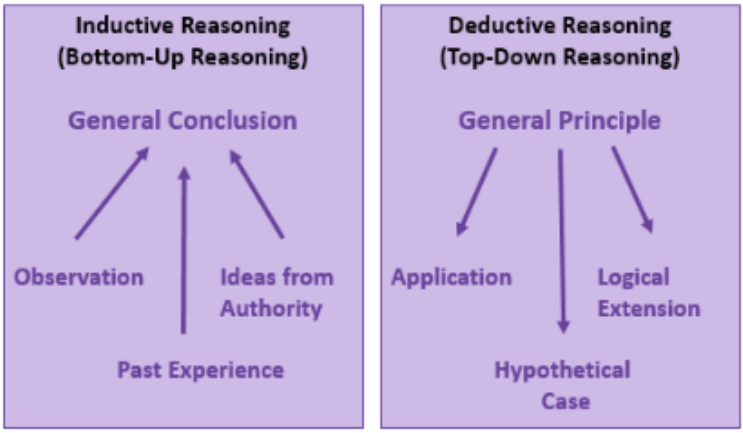


Figure 6.12: Inductive and Deductive Reasoning.

Inductive and Deductive Reasoning: Inductive reasoning emerges in childhood, and is a type of reasoning that is sometimes characterized as "bottom-up-processing" in which *specific observations, or specific comments from those in authority, may be used to draw general conclusions*. However, in inductive reasoning the veracity of the information that created the general conclusion does not guarantee the accuracy of that conclusion. For instance, a child who has only observed thunder on summer days may conclude that it only thunders in the summer. In contrast, **deductive reasoning**, sometimes called "top-down-processing", emerges in adolescence. *This type of reasoning starts with some overarching principle, and based on this proposes specific conclusions*. Deductive reasoning guarantees a truthful conclusion if the premises on which it is based are accurate.

Intuitive versus Analytic Thinking: Cognitive psychologists often refer to intuitive and analytic thought as the Dual-Process Model; the notion that humans have two distinct networks for processing information (Albert & Steinberg, 2011). **Intuitive thought** *is automatic, unconscious, and fast* (Kahneman, 2011), *and it is more experiential and emotional*. In contrast, **Analytic thought** *is deliberate, conscious, and rational*. While these systems interact,

they are distinct (Kuhn, 2013). Intuitive thought is easier and more commonly used in everyday life. It is also more commonly used by children and teens than by adults (Klaczynski, 2001). The quickness of adolescent thought, along with the maturation of the limbic system, may make teens more prone to emotional intuitive thinking than adults.

6.7: High School Dropouts

The **status dropout rate** *refers to the percentage of 16 to 24 year-olds who are not enrolled in school and do not have high school credentials* (either a diploma or an equivalency credential such as a General Educational Development [GED] certificate). The dropout rate is based on sample surveys of the civilian, noninstitutionalized population, which excludes persons in prisons, persons in the military, and other persons not living in households. The dropout rate among high school students has declined from a rate of 12% in 1990, to 7% in 2013 (U.S. Department of Education, 2015). The rate is lower for Whites than for Blacks, and the rates for both Whites and Blacks are lower than the rate for Hispanics. However, the gap between Whites, Blacks, and Hispanics have narrowed (see Figure 6.13).

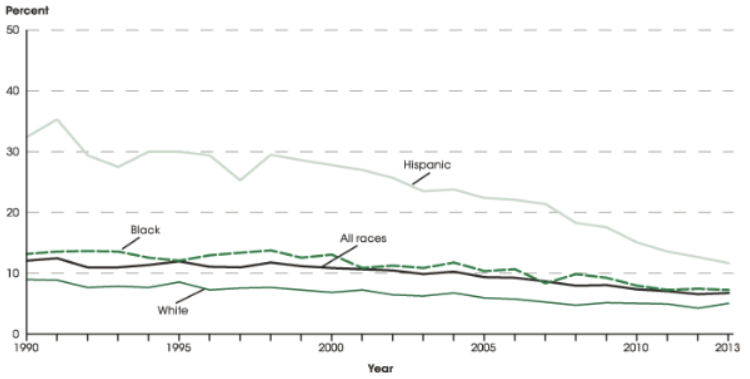


Figure 6.13: Status dropout rates of 16- through 24-year-olds, by race/ethnicity: 1990 through 2013. Source:U.S. Department of Education, National Center for Education Statistics. (2015). *The Condition of Education* 2015 (NCES 2015-144), Status Dropout Rates.

The dropout rate for males in 1990 was 12%, where it stayed until 2000. Thereafter the rate has dropped to 7% in 2013. The dropout

rate for females in 1990 was 12%, where it dropped to 10% in 2000, and in 2013 was 6%. From 1997 until 2012 the rate for males was appreciably higher than for females, while in 2013 the gender difference was minimal (U.S. Department of Education, 2015).

6.8: Teenagers and Working

Many adolescents work either summer jobs, or during the school year. Holding a job may offer teenagers extra funds, the opportunity to learn new skills, ideas about future careers, and perhaps the true value of money. However, there are numerous concerns about teenagers working, especially during the school year. A long-standing concern is that that it "engenders precocious maturity of more adult-like roles and problem behaviors" (Staff, VanEseltine, Woolnough, Silver, & Burrington, 2011, p. 150). Several studies have found that working more than 20 hours per week can lead to declines in grades, a general disengagement from school (Staff, Schulenberg, & Bachman, 2010; Lee & Staff, 2007; Marsh & Kleitman, 2005), an increase in substance abuse (Longest & Shanahan, 2007), engaging in earlier sexual behavior, and pregnancy (Staff et al., 2011).



Figure 6.14: Young woman working in a coffee shop.

However, like many employee groups teens have seen a drop in the number of jobs. The summer jobs of previous generations have been

on a steady decline, according to the United States Department of Labor, Bureau of Labor Statistics (2016). See Figure 6.15 for recent trends.

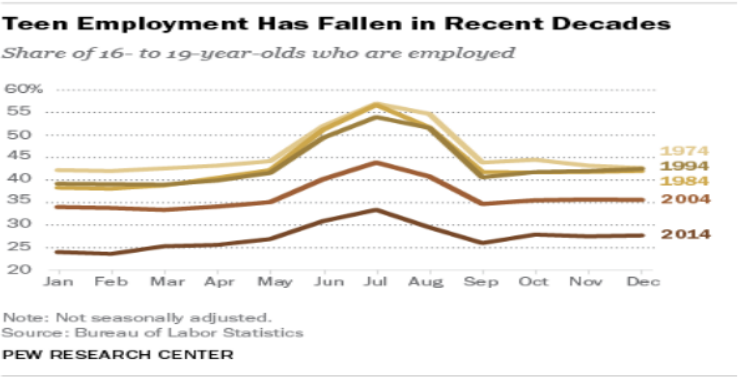


Figure 6.15: Teen employment has fallen in recent decades.

6.9: Teenage Drivers

Driving gives teens a sense of freedom and independence from their parents. It can also free up time for parents as they are not shuttling teens to and from school, activities, or work. The National Highway Traffic Safety Administration (NHTSA) reports that in 2014 young drivers (15 to 20 year-olds) accounted for 5.5% (11.7 million) of the total number of drivers (214 million) in the US (National Center for Statistics and Analysis (NCSA), 2016). However, almost 9% of all drivers involved in fatal crashes that year were young drivers (NCSA, 2016), and according to the National Center for Health Statistics (2014), motor vehicle accidents are the leading cause of death for 15 to 20 year-olds. "In all motorized jurisdictions around the world, young, inexperienced drivers have much higher crash rates than older, more experienced drivers" (NCSA, 2016, p. 1). The rate of fatal crashes is higher for young males than for young females, although for both genders the rate was highest for the 15-20 years-old age group. For young males, the rate for fatal crashes was approximately 46 per 100,000 drivers, compared to 20 per 100,000 drivers for young females. The NHTSA (NCSA, 2016) reported that of the young drivers who were killed and who had alcohol in their system, 81% had a blood alcohol count past what was considered the legal limit. Fatal crashes involving alcohol use were higher among young men than young women. The NHTSA also found that teens were less likely to use seat belt restraints if they were driving under the influence of alcohol, and that restraint use decreased as the level of alcohol intoxication increased.

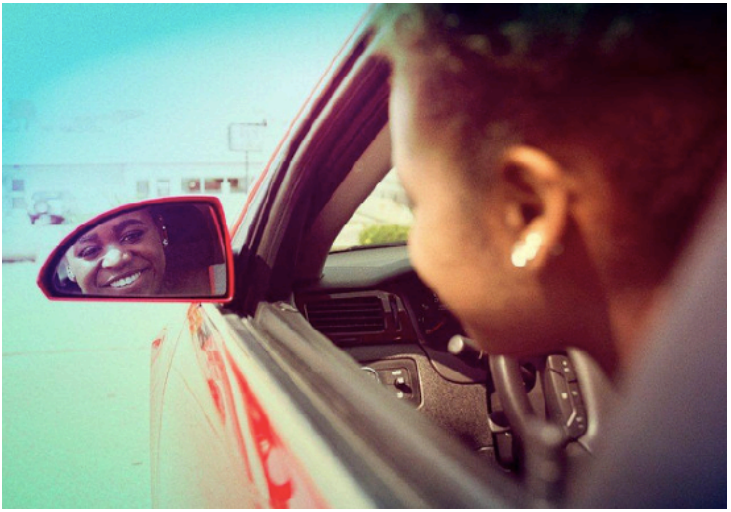


Figure 6.16: Teen driving.

In an AAA study of non-fatal, but moderate to severe motor vehicle accidents in 2014, more than half involved young male drivers 16 to 19 years of age (Carney, McGehee, Harland, Weiss, & Raby, 2015). In 36% of rear-end collisions, teen drivers were following cars too closely to be able to stop in time, and in single-vehicle accidents, driving too fast for weather and road conditions was a factor in 79% of crashes involving teens. Distraction was also a factor in nearly 60% of the accidents involving teen drivers. Fellow passengers, often also teenagers (84% of the time), and cell phones were the top two sources of distraction, respectively. This data suggested that having another teenager in the car increased the risk of an accident by 44% (Carney et al., 2015). According to the NHTSA, 10% of drivers aged 15 to 19 years involved in fatal crashes were reported to be distracted at the time of the crash; the highest figure for any age group (NCSA, 2016). Distraction coupled with inexperience has been found to greatly increase the risk of an accident (Klauer et al., 2014).

The NHTSA did find that the number of accidents has been on a decline since 2005. They attribute this to greater driver training, more social awareness to the challenges of driving for teenagers, and to changes in laws restricting the drinking age. The NHTSA

estimates that the raising of the legal drinking age to 21 in all 50 states and the District of Columbia has saved 30,323 lives since 1975.

6.10: Psychological Development in Adolescence

Learning Objectives: Psychosocial Development in Adolescence

- Describe the changes in self-concept and self-esteem in adolescence
- Summarize Erikson's fifth psychosocial task of identity versus role confusion
- Describe Marcia's four identity statuses
- Summarize the three stages of ethnic identity development
- Describe the parent-teen relationship
- Describe the role of peers
- Describe dating relationships

Self-concept and Self-esteem in Adolescence

In adolescence, teens continue to develop their self-concept. Their ability to think of the possibilities and to reason more abstractly may explain the further differentiation of the self during adolescence. However, the teen's understanding of self is often full of contradictions. Young teens may see themselves as outgoing but also withdrawn, happy yet often moody, and both smart and completely clueless (Harter, 2012). These contradictions, along with the teen's growing recognition that their personality and behavior seems to change depending on who they are with or where they are, can lead the young teen to feel like a fraud. With their parents they may seem angrier and sullen, with their friends they are more outgoing and goofy, and at work they are quiet and cautious. "Which one is really me?" may be the refrain of the young teenager. Harter (2012) found that adolescents emphasize traits such as being

friendly and considerate more than do children, highlighting their increasing concern about how others may see them. Harter also found that older teens add values and moral standards to their self-descriptions.

As self-concept differentiates, so too does self-esteem. In addition to the academic, social, appearance, and physical/athletic dimensions of self-esteem in middle and late childhood, teens also add perceptions of their competency in romantic relationships, on the job, and in close friendships (Harter, 2006). Self-esteem often drops when children transition from one school setting to another, such as shifting from elementary to middle school, or junior high to high school (Ryan, Shim, & Makara, 2013). These drops are usually temporary, unless there are additional stressors such as parental conflict, or other family disruptions (De Wit, Karioja, Rye, & Shain, 2011). Self-esteem rises from mid to late adolescence for most teenagers, especially if they feel competent in their peer relationships, their appearance, and athletic abilities (Birkeland, Melkivik, Holsen, & Wold, 2012).

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. During adolescence we experience **psychological moratorium**, *where teens put on hold commitment to an identity while exploring the options*. The culmination of this exploration is a more coherent view of oneself. Those who are unsuccessful at resolving this stage may either withdraw further into social isolation or become lost in the crowd.

However, more recent research, suggests that few leave this age period with identity achievement, and that most identity formation occurs during young adulthood (C t , 2006).

Expanding on Erikson's theory, James Marcia (2010) identified four identity statuses that represent the four possible combinations of the dimension of commitment and exploration (see Table 6.2).

Commitment to an Identity		
	Absent	
	Present	

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 may make these decisions for their children and do not grant the teen the opportunity to make choices. In other instances, teens may

strongly identify with parents and others in their life and wish to follow in their footsteps.

Identity moratorium *is a status that describes those who are activity 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.

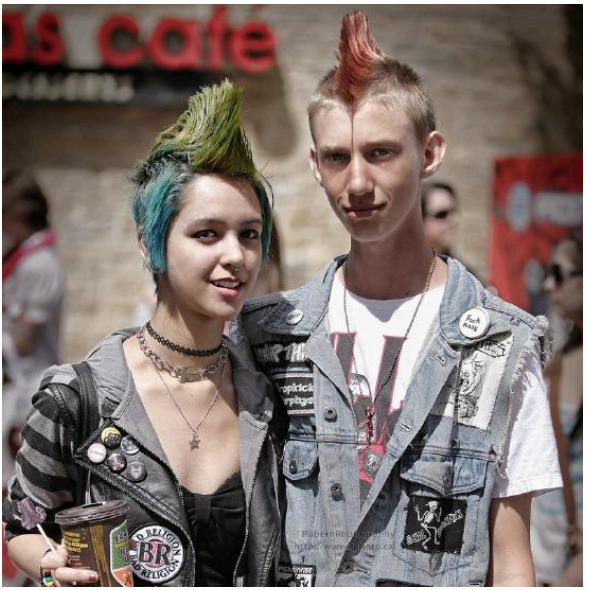


Figure 6.17: Punk subculture.

During high school and the college years, teens and young adults move from identity diffusion and foreclosure toward moratorium and achievement. The biggest gains in the development of identity are in college, as college students are exposed to a greater variety of career choices, lifestyles, and beliefs. This 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).

Developmental psychologists have researched several different areas of identity development and some of the main areas include:

Religious identity: The religious 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, but few completely reject the religion of their families.

Political identity: The political ideology of teens is also influenced by their parents' political beliefs. A new trend in the 21st century is a decrease in party affiliation among adults. Many adults do not align themselves with either the democratic or republican party, but view themselves as more of an "independent". Their teenage children are often following suit or become more apolitical (C t , 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 norms regarding gender keep changing. The roles appropriate for males and females are evolving. Some teens may foreclose on a gender identity as a way of dealing with this uncertainty, and they may adopt more stereotypic male or female roles (Sinclair & Carlsson, 2013).



Figure 6.18: Ethnic identity.

Ethnic identity *refers to how people come to terms with who they are based on their ethnic or racial ancestry.* "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, p. 119). 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. The reverse is rarely the case. This makes ethnic identity far less salient for members of the dominant culture. In the United States, those of European ancestry engage in less exploration of ethnic identity, than do those of non-European ancestry (Phinney, 1989). However, 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.

Phinney's model of ethnic identity formation is based on Erikson's and Marcia's model of identity formation (Phinney, 1990; Syed & Juang, 2014). Through the process of exploration and commitment, individual's come to understand and create an ethic identity. Phinney suggests three stages or statuses with regard to ethnic identity:

1. **Unexamined Ethnic Identity:** Adolescents and adults who have not been exposed to ethnic identity issues may be in the first stage, unexamined ethnic identity. This is often characterized with a preference for the dominant culture, or where the individual has given little thought to the question of their ethnic heritage. This is similar to diffusion in Marcia's model of identity. Included in this group are also those who have adopted the ethnicity of their parents and other family members with little thought about the issues themselves, similar to Marcia's foreclosure status (Phinney, 1990).
2. **Ethnic Identity Search**: Adolescents and adults who are exploring the customs, culture, and history of their ethnic group are in the ethnic identity search stage, similar to Marcia's moratorium status (Phinney, 1990). Often some event "awakens" a teen or adult to their ethnic group; either a personal experience with prejudice, a highly profiled case in the media, or even a more positive event that recognizes the contribution of someone from the individual's ethnic group. Teens and adults in this stage will immerse themselves in their ethnic culture. For some, "it may lead to a rejection of the values of the dominant culture" (Phinney, 1990, p. 503).
3. **Achieved Ethnic Identity:** Those who have actively explored their culture are likely to have a deeper appreciation and understanding of their ethnic heritage, leading to progress toward an achieved ethnic identity (Phinney, 1990). An achieved ethnic identity does not necessarily imply that the individual is highly involved in the customs and values of their ethnic culture. One can be confident in their ethnic identity without wanting to maintain the language or other customs.

The development of ethnic identity takes time, with about 25% of tenth graders from ethnic minority backgrounds having explored and resolved the issues (Phinney, 1989). The more ethnically homogeneous the high school, the less identity exploration and achievement (Umana- Taylor, 2003). Moreover, even in more

ethnically diverse high schools, teens tend to spend more time with their own group, reducing exposure to other ethnicities. This may explain why, for many, college becomes the time of ethnic identity exploration. "[The] transition to college may serve as a consciousness-raising experience that triggers exploration" (Syed & Azmitia, 2009, p. 618).

It is also important to note that those who do achieve ethnic identity may periodically reexamine the issues of ethnicity. This cycling between exploration and achievement is common not only for ethnic identity formation, but in other aspects of identity development (Grotevant, 1987) and is referred to as **MAMA cycling** or *moving back and forth between moratorium and achievement.* **Bicultural/Multiracial Identity:** Ethnic minorities must wrestle with the question of how, and to what extent, they will identify with the culture of the surrounding society and with the culture of their family. Phinney (2006) suggests that people may handle it in different ways. Some may keep the identities separate, others may combine them in some way, while others may reject some of them. **Bicultural identity** means *the individual sees himself or herself as part of both the ethnic minority group and the larger society*. Those who are **multiracial**, that is *whose parents come from two or more ethnic or racial groups*, have a more challenging task. In some cases their appearance may be ambiguous. This can lead to others constantly asking them to categorize themselves. Phinney (2006) notes that the process of identity formation may start earlier and take longer to accomplish in those who are not mono-racial.

6.11: Adolescents' Relationships

Parents and Teens: Autonomy and Attachment

While most adolescents get along with their parents, they do spend less time with them (Smetana, 2011). This decrease in the time spent with families may be a reflection of a *teenager's greater desire for independence* or **autonomy.** It can be difficult for many parents to deal with this desire for autonomy. However, it is likely adaptive for teenagers to increasingly distance themselves and establish relationships outside of their families in preparation for adulthood. This means that both parents and teenagers need to strike a balance between autonomy, while still maintaining close and supportive familial relationships.

Children in middle and late childhood are increasingly granted greater freedom regarding moment-to-moment decision making. This continues in adolescence, as teens are demanding greater control in decisions that affect their daily lives. This can increase conflict between parents and their teenagers. For many adolescents this conflict centers on chores, homework, curfew, dating, and personal appearance. These are all things many teens believe they should manage that parents previously had considerable control over. Teens report more conflict with their mothers, as many mothers believe they should still have some control over many of these areas, yet often report their mothers to be more encouraging and supportive (Costigan, Cauce, & Etchison, 2007). As teens grow older, more compromise is reached between parents and teenagers (Smetana, 2011). Parents are more controlling of daughters, especially early maturing girls, than they are sons (Caspi, Lynam, Moffitt, & Silva, 1993). In addition, culture and ethnicity also play

a role in how restrictive parents are with the daily lives of their children (Chen, Vansteenkiste, Beyers, Soensens, & Van Petegem, 2013).

Having supportive, less conflict ridden relationships with parents also benefits teenagers. Research on attachment in adolescence find that teens who are still securely attached to their parents have less emotional problems (Rawatlal, Kliewer & Pillay, 2015), are less likely to engage in drug abuse and other criminal behaviors (Meeus, Branje & Overbeek, 2004), and have more positive peer relationships (Shomaker & Furman, 2009).

Peers

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 a function of **homophily**, that is, *adolescents who are similar to one another choose to spend time together in a "birds of a feather flock together" way*. Adolescents who spend time together also shape each other's behavior and attitudes.

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. 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*.

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 brains, and are often linked with adolescents' social status and peers' perceptions of their values or behaviors.



Figure 6.19: Crowds refer to different collections of people, like the "theater kids" or the "environmentalists." In a way, they are kind of like clothing brands that label the people associated with that crowd. [Image: Garry Knight]

Romantic 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 relationship (Dolgin, 2011). However, culture does play a role as Asian Americans and Latinas are less likely to date than other ethnic groups (Connolly, Craig, Goldberg, & Pepler, 2004). 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 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 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.



Figure 6.20: Romantic relationships during adolescence.

Although romantic relationships during adolescence are often short-lived rather than long-term committed partnerships, their importance should not be minimized. Adolescents spend a great deal of time focused on romantic relationships, and their positive and negative emotions are more tied to romantic relationships, or lack thereof, than to friendships, family relationships, or school (Furman & Shaffer, 2003). Romantic relationships contribute to adolescents' identity formation, changes in family and peer relationships, and emotional and behavioral adjustment.

Furthermore, romantic relationships are centrally connected to adolescents' emerging sexuality. Parents, policymakers, and researchers have devoted a great deal of attention to adolescents' sexuality, in large part because of concerns related to sexual intercourse, contraception, and preventing teen pregnancies. However, sexuality involves more than this narrow focus. For example, adolescence is often when individuals who are lesbian, gay, bisexual, or transgender come to perceive themselves as such (Russell, Clarke, & Clary, 2009). Thus, romantic relationships are a domain in which adolescents experiment with new behaviors and identities.

6.12: Canadian Resources

Below are resources that provide the Canadian context related to adolescence.

- McCreary Center Society. (2018). *A profile of BC youth who work: A 2018 BC adolescent health survey fact sheet.* http://www.mcs.bc.ca/pdf/2018bcahs_factsheet_3.pdf
- Statistics Canada. (2018). *Canadian youth: hopeful, resilient and hard-working* [Infographic]. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2018055-eng.htm
- Statistics Canada. (2021). *Portrait of Youth in Canada: Physical Health and Behaviours* [Infographic]. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2021011-eng.htm
- McCreary Center Society. (2018). *Supporting BC youth who experience unhealthy eating: A 2018 BC adolescent health survey fact sheet.* http://www.mcs.bc.ca/pdf/2018bcahs_factsheet_6.pdf
- Statistics Canada. (2020). *Well-being of youth not in employment, education or training in Canada, 2015 to 2017* [Infographic]. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2020013-eng.htm
- Statistics Canada. (2019). *What matters to Canadian youth?* [Infographic]. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2019046-eng.htm
- Statistics Canada. (2019). *Young people not working, in school or training: What were they doing?* [Infographic]. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2019012-eng.htm

6.13: Test your knowledge



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7: EMERGING AND EARLY ADULTHOOD

Learning Objectives: Emerging Adulthood

- Explain emerging adulthood
- Explain how emerging adulthood differs from adolescence and adulthood
- Describe cultural variations of emerging adulthood
- Identify the markers of adulthood
- Identify where emerging and early adults currently live

Historically, early adulthood spanned from approximately 18 (the end of adolescence) until 40 to 45 (beginning of middle adulthood). More recently, developmentalists have divided this age period into two separate stages: Emerging adulthood followed by early adulthood. Although these age periods differ in their physical, cognitive, and social development, overall the age period from 18 to 45 is a time of peak physical capabilities and the emergence of more mature cognitive development, financial independence, and intimate relationships.

7.1: Emerging Adulthood

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 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, p. 469).



Figure 7.1: Emerging adults.

Arnett has identified five characteristics of emerging adulthood that distinguishes it from adolescence and young adulthood (Arnett, 2006).

- It is the **age of identity exploration**. In 1950, Erik Erikson proposed that it was during adolescence that humans wrestled with the question of identity. Yet, even Erikson (1968) 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.
- Arnett also described this time period as the **age of instability** (Arnett, 2000; Arnett, 2006). Exploration generates uncertainty and instability. Emerging adults change jobs, relationships, and residences more frequently than other age groups.
- 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. They now begin to see their parents as people not just parents, something most adolescents fail to do (Arnett, 2006). 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.
- 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). Most emerging adults have gone through the changes of puberty, are typically no longer in high school, and many have also moved out of their parents' home. Thus, they no longer feel as dependent as they did as teenagers. Yet, they may still be financially dependent on their parents to some degree, and they have not completely attained some of the indicators of adulthood, such as finishing their education, obtaining a good 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).

- 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. If the parents 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.

Cultural Variations

The five features proposed in the theory of emerging adulthood originally were based on research involving about 300 Americans between ages 18 and 29 from various ethnic groups, social classes, and geographical regions (Arnett, 2004). To what extent does the theory of emerging adulthood apply internationally?



Figure 7.2: The experience of emerging adulthood differ internationally.

The answer to this question depends greatly on what part of the world is considered. Demographers make a useful distinction between the developing countries that comprise the majority of the world's population and the economically developed countries that are part of the Organization for Economic Co-operation and Development (OECD), including the United States, Canada, Western Europe, Japan, South Korea, Australia, and New Zealand. The current population of OECD countries (also called developed countries) is 1.2 billion, about 18% of the total world population (United Nations Development Programme, 2011). The rest of the human population resides in developing countries, which have much lower median incomes, much lower median educational attainment, and much higher incidence of illness, disease, and early death. Let us consider emerging adulthood in other OECD countries as little is known about the experiences of 18- 25 year-olds in developing countries.

The same demographic changes as described above for the United States have taken place in other OECD countries as well. This is true of participation in postsecondary education, as well as median ages for entering marriage and parenthood (UNdata, 2010).

However, there is also substantial variability in how emerging adulthood is experienced across OECD countries. Europe is the region where emerging adulthood is longest and most leisurely. The median ages for entering marriage and parenthood are near 30 in most European countries (Douglass, 2007). 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 generous unemployment benefits for those who cannot find work. In northern Europe, many governments also provide housing support. Emerging adults in European societies make the most of these advantages, gradually making their way to adulthood during their twenties while 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 generous social welfare systems that provide support for them in making the transition to adulthood, including free university education and substantial unemployment benefits.

However, in other ways, the experience of emerging adulthood in Asian OECD 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.



Figure 7.3: Your culture one that promotes romantic relationships for emerging adults? Or does it encourage you to wait till you're older? What would it be like to live in the opposite culture? [Image: Patrick Rodwell]

Although Asian cultures have become more individualistic in recent decades, as a consequence of 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 (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' wishes about what they should study, what job they should take, and where they should live than emerging adults do in the West (Rosenberger, 2007).

7.2: When Does Adulthood Begin?

According to Rankin and Kenyon (2008), historically the process of becoming an adult was more clearly marked by rites of passage. For many individuals, marriage and becoming a parent 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 increase in young adults attending college (Rankin & Kenyon, 2008) and a delay in marriage and having children (Arnett & Taber, 1994; Laursen & Jensen-Campbell, 1999) Consequently, current research has found financial independence and accepting responsibility for oneself to be the most important markers of adulthood in Western culture across age (Arnett, 2001) and ethnic groups (Arnett, 2004).



Figure 7.4: What are the markers of adulthood?

In looking at college students' perceptions of adulthood, Rankin and Kenyon (2008) found that some students still view rites of passage

as important markers. College students who had placed more importance on role transition markers, such as parenthood and marriage, belonged to a fraternity/sorority, were traditionally aged (18–25), belonged to an ethnic minority, were of a traditional marital status; i.e., not cohabitating, or belonged to a religious organization, particularly for men. These findings supported the view that people holding collectivist or more traditional values place more importance on role transitions as markers of adulthood. In contrast, older college students and those cohabitating did not value role transitions as markers of adulthood as strongly.

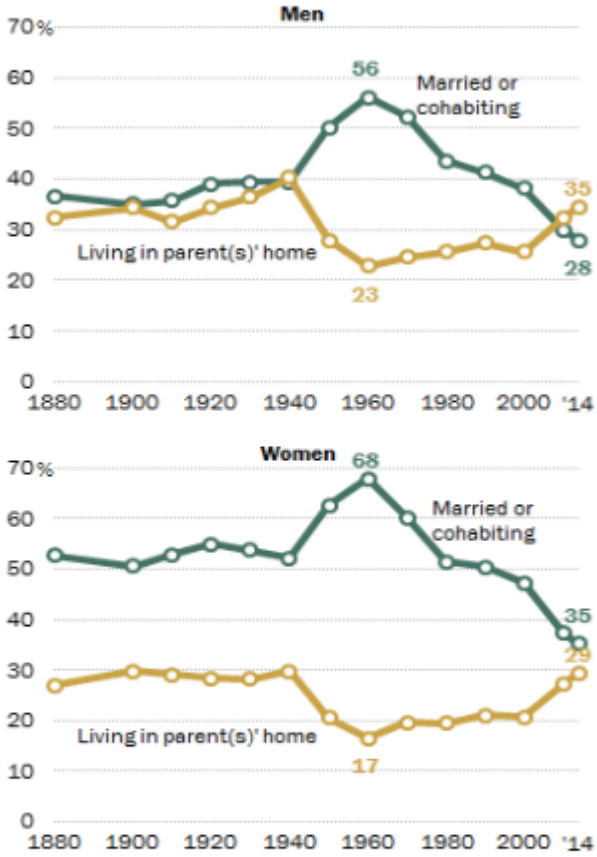
Young Adult Living Arrangements

In 2014, for the first time in more than 130 years, adults 18 to 34 were more likely to be living in their parents' home than they were to be living with a spouse or partner in their own household (Fry, 2016). The current trend is that young Americans are not choosing to settle down romantically before age 35. Since 1880, living with a romantic partner was the most common living arrangement among young adults. In 1960, 62% of America's 18- to 34-year-olds were living with a spouse or partner in their own household, while only 20% were living with their parents.

By 2014, 31.6% of early adults were living with a spouse or partner in their own household, while 32.1% were living in the home of their parent(s). Another 14% of early adults lived alone, were a single parent, or lived with one or more roommates. The remaining 22% lived in the home of another family member (such as a grandparent, in-law, or sibling), a non-relative, or in group quarters (e.g., college dormitories). Comparing ethnic groups, 36% of black and Hispanic early adults lived at home, while 30% of white young adults lived at home.

Young men are now more likely to live with a parent than to live with a spouse or partner; not so for women

% of 18- to 34-year-olds



Note: "Living in parent(s)' home" means residing in a household headed by a parent regardless of the young adult's partnership status.

Source: Pew Research Center tabulations of the 1880-2000 U.S. decennial censuses and 2010 and 2014 American Community Surveys (IPUMS)

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Figure 7.5: Young men are now more likely to live with a parent than to live with a spouse or partner; not so for women.

As can be seen in Figure 7.5, gender differences in living arrangements are also noted in that young men are living with parents at a higher rate than young women. In 2014, 35% of young me were residing with their parents, while 28% were living with a spouse or partner in their own household. Young women were more likely to be living with a spouse or partner (35%) than living with their parents (29%). Additionally, more young women (16%) than young men (13%) were heading up a household without a spouse or partner, primarily because women are more likely to be single parents living with their children. Lastly, young men (25%) are more likely than young women (19%) to be living in the home of another family member, a non-relative, or in some type of group quarters (Fry, 2016).

What are some factors that help explain these changes in living arrangements? First, early adults are postponing marriage or choosing not to marry or cohabitate. Lack of employment and lower wages have especially contributed to males residing with their parents. Men who are employed are less likely to live at home. Wages for young men (adjusting for inflation) have been falling since 1970 and correlate with the rise in young men living with their parents. The recent recession and recovery (2007-present) has also contributed to the increase in early adults living at home. College enrollments increased during the recession, which further increased early adults living at home. However, once early adults possess a college degree, they are more likely to establish their own households (Fry, 2016).

7.3: Physical Development in Early and Emerging Adulthood

Learning Objectives: Physical Development in Emerging and Early Adulthood

- Summarize the overall physical growth in early adulthood
- Describe statistics, possible causes, and consequences of obesity
- Explain how early adulthood is a healthy, yet risky time of life.
- Identify the risk factors for substance use
- Describe the changes in brain maturation
- Define sexuality and explain the female and male reproductive systems
- Describe the brain areas and hormones responsible for sexual behavior
- Identify sexually transmitted infections
- Describe cultural views related to sexuality
- Describe research on sexual orientation

The Physiological Peak

People in their mid-twenties to mid-forties are considered to be in early adulthood. By the time we reach early adulthood, our physical maturation is complete, although our height and weight may increase slightly. Those in their early twenties are probably at the peak of their physiological development, including muscle strength, reaction time, sensory abilities, and cardiac functioning. The reproductive system, motor skills, strength, and lung capacity are all operating at their best. Most professional athletes are at the top of their game during this stage, and many women have children in the early-adulthood years (Boundless, 2016).

The aging process actually begins during early adulthood. Around the age of 30, many changes begin to occur in different parts of the body. For example, the lens of the eye starts to stiffen and thicken, resulting in changes in vision (usually affecting the ability to focus on close objects). Sensitivity to sound decreases; this happens twice as quickly for men as for women. Hair can start to thin and become gray around the age of 35, although this may happen earlier for some individuals and later for others. The skin becomes drier and wrinkles start to appear by the end of early adulthood. This includes a decline in response time and the ability to recover quickly from physical exertion. The immune system also becomes less adept at fighting off illness, and reproductive capacity starts to decline (Boundless, 2016).

Obesity

Although at the peak of physical health, a concern for early adults is the current rate of obesity. Results from the 2015 National Center for Health Statistics indicate that an estimated 70.7% of U.S. adults aged 20 and over are overweight and 37.9% are obese (CDC, 2015b). **Body mass index (BMI)**, *expressed as weight in kilograms divided by height in meters squared (kg/m2)*, is commonly used to classify overweight (BMI 25.0–29.9), obesity (BMI greater than or equal to 30.0), and extreme obesity (BMI greater than or equal to 40.0). The 2015 statistics are an increase from the 2013-2014 statistics that indicated that an estimated 35.1% were obese, and 6.4% extremely obese (Fryar, Carroll, & Ogden, 2014). In 2003-2004, 32% of American adults were identified as obese. The CDC also indicated that one's 20s are the prime time to gain weight as the average person gains one to two pounds per year from early adulthood into middle adulthood. The average man in his 20s weighs around 185 pounds and by his 30s weighs approximately 200 pounds. The

average American woman weighs 162 pounds in her 20s and 170 pounds in her 30s.

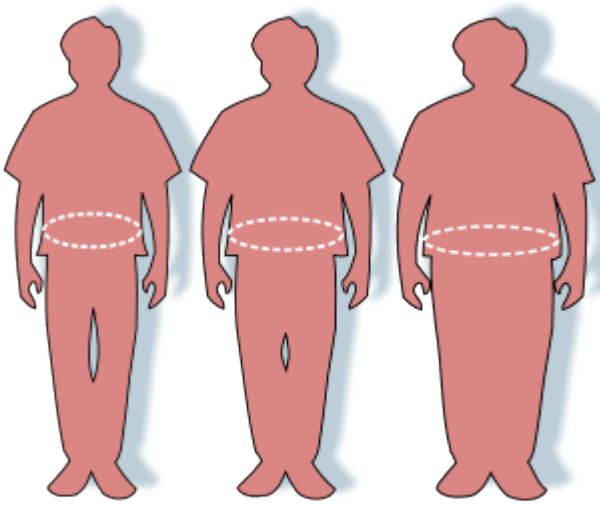


Figure 7.6: Waist circumference.

The American obesity crisis is also reflected worldwide (Wighton, 2016). In 2014, global obesity rates for men were measured at 10.8% and among women 14.9%. This translates to 266 million obese men and 375 million obese women in the world, and more people were identified as obese than underweight. Although obesity is seen throughout the world, more obese men and women live in China and the USA than in any other country. Figure 7.6 illustrates how waist circumference is also used as a measure of obesity. Figure 7.7 demonstrates the percentage growth for males and females identified as obese between 1960 and 2012.

Causes of Obesity: According to the Centers for Disease Control and Prevention (CDC) (2016), obesity originates from a complex set of contributing factors, including one's environment, behavior, and genetics. Societal factors include culture, education, food marketing and promotion, the quality of food, and the physical activity environment available. Behaviors leading to obesity include diet,

the amount of physical activity, and medication use. Lastly, there does not appear to be a single gene responsible for obesity. Rather, research has identified variants in several genes that may contribute to obesity by increasing hunger and food intake. Another genetic explanation is the mismatch between today's environment and "energy-thrifty genes" that multiplied in the distant past, when food sources were unpredictable. The genes that helped our ancestors survive occasional famines are now being challenged by environments in which food is plentiful all the ime. Overall, obesity most likely results from complex interactions among the environment and multiple genes.

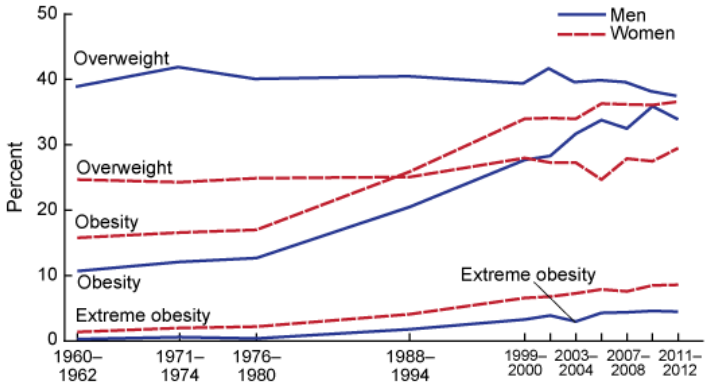


Figure 7.7: Adult obesity trends.

Obesity Health Consequences: Obesity is considered to be one of the leading causes of death in the United States and worldwide. Additionally, the medical care costs of obesity in the United States were estimated to be $147 billion in 2008. According to the CDC (2016) compared to those with a normal or healthy weight, people who are obese are at increased risk for many serious diseases and health conditions including:

- All-causes of death (mortality)
- High blood pressure (Hypertension)

- High LDL cholesterol, low HDL cholesterol, or high levels of triglycerides (Dyslipidemia)
- Type 2 diabetes
- Coronary heart disease
- Stroke
- Gallbladder disease
- Osteoarthritis (a breakdown of cartilage and bone within a joint)
- Sleep apnea and breathing problems
- Some cancers (endometrial, breast, colon, kidney, gallbladder, and liver)
- Low quality of life
- Mental illness such as clinical depression, anxiety, and other mental disorders
- Body pain and difficulty with physical functioning

7.4: 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, the top five causes of death in emerging and early adulthood are non-intentional injury (including motor vehicle accidents), homicide, and suicide with cancer and heart disease completing the list (Heron, & Smith, 2007). Rates of violent death (homicide, suicide, and accidents) are highest among young adult males, and vary 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).

Alcohol Abuse

A significant contributing factor to risky behavior is alcohol. According to the 2014 National Survey on Drug Use and Health (National Institute on Alcohol Abuse and Alcoholism (NIAAA)), 88% of people ages 18 or older reported that they drank alcohol at some point in their lifetime; 71% reported that they drank in the past year; and 57% reported drinking in the past month. Additionally, 6.7% reported that they engaged in heavy drinking in the past month. Heavy drinking is defined as drinking five or more drinks on the same occasion on each of five or more days in the past 30 days. Nearly 88,000 people (approximately 62,000 men and 26,000 women) die from alcohol-related causes annually, making it the fourth leading preventable cause of death in the United States. In

2014, alcohol-impaired driving fatalities accounted for 9,967 deaths (31% of overall driving fatalities).

The NIAAA defines binge drinking when blood alcohol concentration levels reach 0.08 g/dL. This typically occurs after four drinks for women and five drinks for men in approximately two hours. In 2014, 25% of people ages 18 or older reported that they engaged in binge drinking in the past month. According to the NIAAA (2015) "Binge drinking poses serious health and safety risks, including car crashes, drunk-driving arrests, sexual assaults, and injuries. Over the long term, frequent binge drinking can damage the liver and other organs," (p. 1).

Alcohol and College Students

Results from the 2014 survey demonstrated a difference between the amount of alcohol consumed by college students and those of the same age who are not in college (NIAAA, 2016). Specifically, 60% of full-time college students' ages 18–22 drank alcohol in the past month compared with 51.5% of other persons of the same age not in college. In addition, 38% of college students' ages 18–22 engaged in binge drinking; that is, five or more drinks on one occasion in the past month, compared with 33.5% of other persons of the same age. Lastly, 12% of college students' (ages 18–22) engaged in heavy drinking; that is, binge drinking on five or more occasions per month, in the past month. This compares with 9.5% of other emerging adults not in college.

The consequences for college drinking are staggering, and the NIAAA (2016) estimates that each year the following occur:

- 1,825 college students between the ages of 18 and 24 die from alcohol-related unintentional injuries, including motor-vehicle crashes.
- 696,000 students between the ages of 18 and 24 are assaulted by another student who has been drinking.
- Roughly 1 in 5 college students meet the criteria for an Alcohol Use Disorder.
- About 1 in 4 college students report academic consequences from drinking, including missing class, falling behind in class, doing poorly on exams or papers, and receiving lower grades overall. (p. 1)
- 97,000 students between the ages of 18 and 24 report experiencing alcohol-related sexual assault or date rape.

The role alcohol plays in predicting acquaintance rape on college campuses is of particular concern. "Alcohol use in one the strongest predictors of rape and sexual assault on college campuses," (Carroll, 2016, p. 454). Krebs, Lindquist, Warner, Fisher and Martin (2009) found that over 80% of sexual assaults on college campuses involved alcohol. Being intoxicated increases a female's risk of being the victim of date or acquaintance rape (Carroll, 2007). Females are more likely to blame themselves and to be blamed by others if they were intoxicated when raped. College students view perpetrators who were drinking as less responsible, and victims who were drinking as more responsible for the assaults (Untied, Orchowski, Mastroleo, & Gidycz, 2012).



Figure 7.8: Alcohol consumption by college students.

Factors Affecting College Students' Drinking: Several factors associated with college life affect a student's involvement with alcohol (NIAAA, 2015). These include the pervasive availability of alcohol, inconsistent enforcement of underage drinking laws, unstructured time, coping with stressors, and limited interactions with parents and other adults. Due to social pressures to conform and expectations when entering college, the first six weeks of freshman year are an especially susceptible time for students. Additionally, more drinking occurs in colleges with active Greek systems and athletic programs. Alcohol consumption is lowest among students living with their families and commuting, while it is highest among those living in fraternities and sororities.

College Strategies to Curb Drinking: Strategies to address college drinking involve the individual-level and campus community as a whole. Identifying at-risk groups, such as first year students, members of fraternities and sororities, and athletes has proven helpful in changing students' knowledge, attitudes, and behavior regarding alcohol (NIAAA, 2015). Interventions include education and awareness programs, as well as intervention by health professionals. At the college-level, reducing the availability of alcohol has proven effective by decreasing both consumption and negative consequences.

Non-Alcohol Substance Use: Illicit drug use peaks between the ages of 19 and 22 and then begins to decline. Additionally, 25% of those who smoke cigarettes, 33% of those who smoke marijuana, and 70% of those who abuse cocaine began using after age 17 (Volkow, 2004). Emerging adults (18 to 25) are the largest abusers of prescription opioid pain relievers, anti-anxiety medications, and Attention Deficit Hyperactivity Disorder medication (National Institute on Drug Abuse, 2015). In 2014 more than 1700 emerging adults died

from a prescription drug overdose. This is an increase of four times since 1999. Additionally, for every death there were 119 emergency room visits.



Figure 7.9: Illicit drug use in early adulthood.

Daily marijuana use is at the highest level in three decades (National Institute on Drug Abuse, 2015). For those in college, 2014 data indicate that 6% of college students smoke marijuana daily, while only 2% smoked daily in 1994. For noncollege students of the same age, the daily percentage is twice as high (approximately 12%). Additionally, daily cigarette smoking is lower for those in college as only 13% smoked in the past month, while for those not in college it was almost 25%.

Rates of violent death are influenced by substance use which peaks during emerging and early adulthood. 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. Drug and alcohol use increase 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 anal sex without the use of a condom, having multiple partners, or having sex with someone whose history

is unknown. Lastly, as previously discussed, drugs and alcohol ingested during pregnancy have a teratogenic effect on the developing embryo and fetus.

7.5: Gender

Sex *refers to physical or physiological differences between males, females, and intersex persons, including both their primary and secondary sex characteristics.* **Gender**, on the other hand, *refers to social or cultural distinctions associated with a given sex.* When babies are born, they are assigned a gender based on their biological sex, male babies are assigned as boys, female babies are assigned as girls, and intersex babies are usually relegated into one category or another. Scholars generally regard gender as a social construct, *meaning that it does not exist naturally, but is instead a concept that is created by cultural and societal norms.* From birth, children are socialized to conform to certain gender roles based on their biological sex and the gender to which they are assigned.

Since the term sex refers to biological or physical distinctions, characteristics of sex will not vary significantly between different human societies. For example, persons of the female sex, in general, regardless of culture, will eventually menstruate and develop breasts that can lactate. Characteristics of gender, on the other hand, may vary greatly between different societies. For example, in American culture, it is considered feminine to wear a dress or skirt. However, in many Middle Eastern, Asian, and African cultures, dresses or skirts (often referred to as sarongs, robes, or gowns) can be considered masculine. Similarly, the kilt worn by a Scottish male does not make him appear feminine in his culture.

Gender identity *is a person's sense of self as a member of a particular gender. Individuals who identify with a role that corresponds to the sex assigned to them at birth (for example, they were born with male sex characteristics, were assigned as a boy, and identify today as a boy or man) are* **cisgender**. *Those who identify with a role that is different from their biological sex (for example, they were born with male sex characteristics, were assigned as a boy, but*

identify today as a girl, woman, or some other gender altogether) are often referred to as **transgender.**

The term transgender encompasses a wide range of possible identities, including agender, genderfluid, genderqueer (signifying gender experiences that do not fit into a binary concept), androgynous, bigender, pangender, ambigender, non-gendered, and intergender. **Two-spirit** *is a modern umbrella term used by some indigenous North Americans to describe gender-variant individuals in their communities.*

Transgender is independent of sexual orientation; transgender people may identify as heterosexual, homosexual, bisexual, pansexual, polysexual, asexual, or any other kind of sexuality, just like cisgender people do. It is difficult to determine the prevalence of transgender people in society; however, it is estimated that 700,000 individuals in the United States (0.3%) are transgender (Gates, 2011).



Figure 7.10: Transgender is independent of sexual orientation.

Some transgender individuals may alter their bodies through medical interventions, such as surgery and hormonal therapy, so that their physical being is better aligned with gender identity. Not

all transgender individuals choose to alter their bodies or physically transition. Many will maintain their original anatomy, but may present themselves to society as a different gender, often by adopting the dress, hairstyle, mannerisms, or other characteristics typically assigned to a certain gender. It is important to note that people who cross-dress, or wear clothing that is traditionally assigned to the opposite gender, such as transvestites, drag kings, and drag queens, do not necessarily identify as transgender (though some do). People often confuse the term **transvestite**, *which is the practice of dressing and acting in a style or manner traditionally associated with another sex*, with transgender. Cross-dressing is typically a form of self-expression, entertainment, or personal style, and not necessarily an expression about one's gender identity.

Transgender Discrimination: Transgender people are much more likely to experience harassment, bullying, and violence based on their gender identity; they also experience much higher rates of discrimination in housing, employment, healthcare, and education (National Center for Transgender Equality, 2015). Transgender individuals of color face additional financial, social, and interpersonal challenges, in comparison to the transgender community as a whole, as a result of structural racism. Specifically, black transgender people reported the highest level of discrimination among all transgender individuals of color. As members of several intersecting minority groups, transgender people of color, and transgender women of color in particular, are especially vulnerable to employment discrimination, poor health outcomes, harassment, and violence. Consequently, they face even greater obstacles than white transgender individuals and cisgender members of their own race.

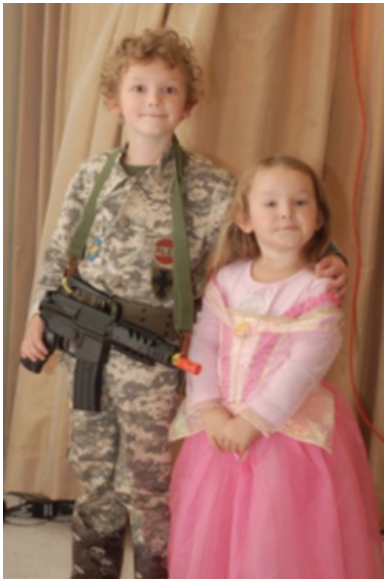


Figure 7.11: Gender roles.

Gender Roles: As we grow, we learn how to behave from those around us. In this socialization process, children are introduced to certain roles that are typically linked to their biological sex. The term **gender role** *refers to society's concept of how men and women are expected to act and behave.* Gender roles are based on norms, or standards, created by society. In American culture, masculine roles have traditionally been associated with strength, aggression, and dominance, while feminine roles have traditionally been associated with passivity, nurturing, and subordination.

The drive to adhere to masculine and feminine gender roles continues throughout life. Men tend to outnumber women in professions such as law enforcement, the military, and politics; women tend to outnumber men in care-related occupations such as childcare, healthcare, and social work. These occupational roles are examples of typical American male and female behavior, derived not from biology or genetics, but from our culture's traditions. Adherence to these roles demonstrates fulfillment of social

expectations, but not necessarily personal preference (Diamond, 2002).

7.6: Sexuality

Human sexuality *refers to people's sexual interest in and attraction to others, as well as their capacity to have erotic experiences and responses.* Sexuality may be experienced and expressed in a variety of ways, including thoughts, fantasies, desires, beliefs, attitudes, values, behaviors, practices, roles, and relationships. These may manifest themselves in biological, physical, emotional, social, or spiritual aspects. The biological and physical aspects of sexuality largely concern the human reproductive functions, including the human sexual-response cycle and the basic biological drive that exists in all species. Emotional aspects of sexuality include bonds between individuals that are expressed through profound feelings or physical manifestations of love, trust, and care. Social aspects deal with the effects of human society on one's sexuality, while spirituality concerns an individual's spiritual connection with others through sexuality. Sexuality also impacts, and is impacted by cultural, political, legal, philosophical, moral, ethical, and religious aspects of life.

The Sexual Response Cycle: *Sexual motivation, often referred to as* **libido**, *is a person's overall sexual drive or desire for sexual activity.* This motivation is determined by biological, psychological, and social factors. In most mammalian species, sex hormones control the ability to engage in sexual behaviors. However, sex hormones do not directly regulate the ability to copulate in primates (including humans); rather, they are only one influence on the motivation to engage in sexual behaviors. Social factors, such as work and family also have an impact, as do internal psychological factors like personality and stress. Sex drive may also be affected by hormones, medical conditions, medications, lifestyle stress, pregnancy, and relationship issues.

The **sexual response cycle** *is a model that describes the physiological responses that take place during sexual activity.*

According to Kinsey, Pomeroy, and Martin (1948), the cycle consists of four phases: excitement, plateau, orgasm, and resolution. The **excitement phase** *is the phase in which the intrinsic (inner) motivation to pursue sex arises.* The **plateau phase** *is the period of sexual excitement with increased heart rate and circulation that sets the stage for orgasm.* **Orgasm** *is the release of tension*, and the **resolution period** *is the unaroused state before the cycle begins again.*

The Brain and Sex: The brain is the structure that translates the nerve impulses from the skin into pleasurable sensations. It controls nerves and muscles used during sexual behavior. The brain regulates the release of hormones, which are believed to be the physiological origin of sexual desire. The cerebral cortex, which is the outer layer of the brain that allows for thinking and reasoning, is believed to be the origin of sexual thoughts and fantasies. Beneath the cortex is the limbic system, which consists of the amygdala, hippocampus, cingulate gyrus, and septal area. These structures are where emotions and feelings are believed to originate, and are important for sexual behavior.

The **hypothalamus** is the most important part of the brain for sexual functioning. *This is the small area at the base of the brain consisting of several groups of nerve-cell bodies that receives input from the limbic system.* Studies with lab animals have shown that destruction of certain areas of the hypothalamus causes complete elimination of sexual behavior. One of the reasons for the importance of the hypothalamus is that it controls the pituitary gland, which secretes hormones that control the other glands of the body.

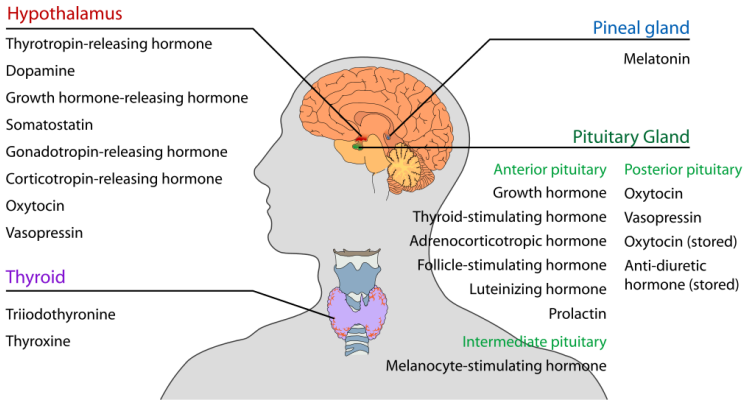


Figure 7.12: Hypothalamus, thyroid, pineal gland, and pituitary gland.

Hormones: Several important sexual hormones are secreted by the pituitary gland. **Oxytocin,** also known as the hormone of love, *is released during sexual intercourse when an orgasm is achieved.* Oxytocin is also released in females when they give birth or are breast feeding; it is believed that oxytocin is involved with maintaining close relationships. Both prolactin and oxytocin stimulate milk production in females. **Follicle-stimulating hormone (FSH)** *is responsible for ovulation in females by triggering egg maturity; it also stimulates sperm production in males.* **Luteinizing hormone (LH)** *triggers the release of a mature egg in females during the process of ovulation.*

In males, testosterone appears to be a major contributing factor to sexual motivation. Vasopressin *is involved in the male arousal phase*, and the increase of vasopressin during erectile response may be directly associated with increased motivation to engage in sexual behavior.

The relationship between hormones and female sexual motivation is not as well understood, largely due to the overemphasis on male sexuality in Western research. Estrogen and progesterone typically *regulate motivation to engage in sexual behavior for females, with estrogen increasing motivation and progesterone decreasing it.* The

levels of these hormones rise and fall throughout a woman's menstrual cycle. Research suggests that testosterone, oxytocin, and vasopressin are also implicated in female sexual motivation in similar ways as they are in males, but more research is needed to understand these relationships.

Sexual Responsiveness Peak: 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.

Sexually Transmitted Infections: Sexually transmitted infections (STIs), also referred to as sexually transmitted diseases (STDs) or venereal diseases (VDs), *are illnesses that have a significant probability of transmission by means of sexual behavior, including vaginal intercourse, anal sex, and oral sex.* Some STIs can also be contracted by sharing intravenous drug needles with an infected person, as well as through childbirth or breastfeeding.

Common STIs include:

- Chlamydia;
- Herpes (HSV-1 and HSV-2);
- Human papillomavirus (HPV);
- Gonorrhea;
- Syphilis;
- Trichomoniasis;
- HIV (human immunodeficiency virus) and AIDS (acquired immunodeficiency syndrome).

According to the Centers for Disease Control and Prevention (CDC)

(2014), there was an increase in the three most common types of STDs in 2014. These include 1.4 million cases of chlamydia, 350,000 cases of gonorrhea, and 20,000 cases of syphilis. Those most affected by STDS include those younger, gay/bisexual males, and females. The most effective way to prevent transmission of STIs is to practice safe sex and avoid direct contact of skin or fluids which can lead to transfer with an infected partner. Proper use of safe-sex supplies (such as male condoms, female condoms, gloves, or dental dams) reduces contact and risk and can be effective in limiting exposure; however, some disease transmission may occur even with these barriers.

Societal Views on Sexuality: Society's views on sexuality are influenced by everything from religion to philosophy, and they have changed throughout history and are continuously evolving. Historically, religion has been the greatest influence on sexual behavior in the United States; however, in more recent years, peers and the media have emerged as two of the strongest influences, particularly among American teens (Potard, Courtois, & Rusch, 2008).

Mass media in the form of television, magazines, movies, and music continues to shape what is deemed appropriate or normal sexuality, targeting everything from body image to products meant to enhance sex appeal. Media serves to perpetuate a number of social scripts about sexual relationships and the sexual roles of men and women, many of which have been shown to have both empowering and problematic effects on people's (especially women's) developing sexual identities and sexual attitudes.

Cultural Differences: In the West, premarital sex is 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, cohabitation is also normative; most people have at least one cohabiting partnership before marriage. In southern Europe, cohabiting is still taboo, but premarital sex is tolerated in emerging adulthood. In contrast, both premarital sex and cohabitation remain rare and forbidden throughout Asia. Even

dating is discouraged until the 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 & Rapson, 2006).

Sexual Orientation: A person's **sexual orientation** *is their emotional and sexual attraction to a particular sex or gender.* It is a personal quality that inclines people to feel romantic or sexual attraction (or a combination of these) to persons of a given sex or gender. According to the American Psychological Association (APA) (2016), sexual orientation also refers to a person's sense of identity based on those attractions, related behaviors, and membership in a community of others who share those attractions.

Sexual Orientation on a Continuum: Sexuality researcher Alfred Kinsey was among the first to conceptualize sexuality as a continuum rather than a strict dichotomy of gay or straight. To classify this continuum of heterosexuality and homosexuality, Kinsey et al. (1948) created a seven-point rating scale that ranged from exclusively heterosexual to exclusively homosexual. Research done over several decades has supported this idea that sexual orientation ranges along a continuum, from exclusive attraction to the opposite sex/gender to exclusive attraction to the same sex/gender (Carroll, 2016).



Figure 7.13a: Heterosexual couple.

However, sexual orientation now can be defined in many ways. **Heterosexuality**, which is often referred to as being straight, *is attraction to individuals of the opposite sex/gender*, while **homosexuality**, being gay or lesbian, *is attraction to individuals of one's own sex/gender.* **Bisexuality** *was a term traditionally used to refer to attraction to individuals of either male or female sex, but it has recently been used in nonbinary models of sex and gender* (i.e., models that do not assume there are only two sexes or two genders) to refer to attraction to *any* sex or gender. Alternative terms such as **pansexuality** and **polysexuality** have also been developed, *referring to attraction to* ***all*** *sexes/genders and attraction to multiple sexes/genders, respectively* (Carroll, 2016).



Figure 7.13b: Lesbian couple.

Asexuality *refers to having no sexual attraction to any sex/gender*. According to Bogaert (2015) about one percent of the population is asexual. Being asexual is not due to any physical problems, and the lack of interest in sex does not cause the individual any distress. Asexuality is being researched as a distinct sexual orientation.

Development of Sexual Orientation: According to current scientific understanding, individuals are usually aware of their sexual orientation between middle childhood and early adolescence. However, this is not always the case, and some do not become aware of their sexual orientation until much later in life. It is not necessary to participate in sexual activity to be aware of these emotional, romantic, and physical attractions; people can be celibate and still recognize their sexual orientation. Some researchers argue that sexual orientation is not static and inborn, but is instead fluid and changeable throughout the lifespan.

There is no scientific consensus regarding the exact reasons why an individual holds a particular sexual orientation. Research has examined possible biological, developmental, social, and cultural influences on sexual orientation, but there has been no evidence that links sexual orientation to one factor (APA, 2016). Biological explanations, that include genetics, hormones, and birth order, will be explored further.



Figure 7.14: Twins laying on snow.

Using both twin and familial studies, heredity provides one biological explanation for sexual orientation. Bailey and Pillard (1991) studied pairs of male twins and found that the concordance rate for identical twins was 52%, while the rate for fraternal twins was only 22%. Bailey, Pillard, Neale, and Agyei (1993) studied female twins and found a similar difference with a concordance rate of 48% for identical twins and 16% for fraternal twins. Schwartz, Kim, Kolundzija, Rieger, and Sanders (2010) found that gay men had more homosexual male relatives than heterosexual men, and sisters of gay men were more likely to be lesbians than sisters of straight men.

Excess or deficient exposure to hormones during prenatal development has also been theorized as an explanation for sexual orientation. One-third of females exposed to abnormal amounts of prenatal androgens, a condition called congenital adrenal hyperplasia (CAH), identify as bisexual or lesbian (Cohen-Bendahan, van de Beek, & Berenbaum, 2005). In contrast, too little exposure to prenatal androgens may affect male sexual orientation by not masculinizing the male brain (Carlson, 2011).

Another explanation attempts to explain why gay men tend to have a greater number of older brothers than heterosexual men

(Blanchard, 2001). This difference is explained by the **maternal immune hypothesis** which proposes "*a progressive immunization to male-specific antigens after the birth of successive sons in some mothers, which increases the effect of anti-male antibodies on the sexual differentiation of the brain in the developing fetus*" (Carroll, 2016, p. 264). Consequently, in some families with multiple brothers, those born later have demonstrated higher rates of homosexuality.

Sexual Orientation Discrimination: The United States is **heteronormative**, *meaning that society supports heterosexuality as the norm.* Consider, for example, that homosexuals are often asked, "When did you know you were gay?" but heterosexuals are rarely asked, "When did you know you were straight?" (Ryle, 2011). Living in a culture that privileges heterosexuality has a significant impact on the ways in which non-heterosexual people are able to develop and express their sexuality.



Figure 7.15: Gay couple.

Open identification of one's sexual orientation may be hindered by **homophobia** *which encompasses a range of negative attitudes and*

feelings toward homosexuality or people who are identified or perceived as being lesbian, gay, bisexual, or transgender (LGBT). It can be expressed as antipathy, contempt, prejudice, aversion, or hatred; it may be based on irrational fear and is sometimes related to religious beliefs (Carroll, 2016). Homophobia is observable in critical and hostile behavior, such as discrimination and violence on the basis of sexual orientations that are non- heterosexual. Recognized types of homophobia include institutionalized homophobia, *such as religious and state-sponsored homophobia*, and internalized homophobia *in which people with same-sex attractions internalize, or believe, society's negative views and/or hatred of themselves.*

Gays, lesbians, and bisexual people regularly experience stigma, harassment, discrimination, and violence based on their sexual orientation (Carroll, 2016). Research has shown that gay, lesbian, and bisexual teenagers are at a higher risk of depression and suicide due to exclusion from social groups, rejection from peers and family, and negative media portrayals of homosexuals (Bauermeister et al., 2010). Discrimination can occur in the workplace, in housing, at schools, and in numerous public settings. Much of this discrimination is based on stereotypes and misinformation. Major policies to prevent discrimination based on sexual orientation have only come into effect in the United States in the last few years.

The majority of empirical and clinical research on lesbian, gay, bisexual, and transgender (LGBT) populations are done with largely white, middle-class, well-educated samples. This demographic limits our understanding of more marginalized sub-populations that are also affected by racism, classism, and other forms of oppression. In the United States, non-Caucasian LGBT individuals may find themselves in a double minority, in which they are not fully accepted or understood by Caucasian LGBT communities, and are also not accepted by their own ethnic group (Tye, 2006). Many people experience racism in the dominant LGBT community where racial stereotypes merge with gender stereotypes.

7.7: Cognitive Development in Emerging and Early Adulthood

Learning Objectives: Cognitive Development in Emerging and Early Adulthood

- Distinguish between formal and postformal thought
- Describe dialectical thought
- Describe the changes in educational attainment and the costs of education
- Describe the benefits of education beyond high school
- Describe the stages in career development, millennial employment, and NEETS
- Describe sexism and how it affects hiring, employment, and education

Beyond Formal Operational Thought: Postformal Thought

As mentioned in chapter 6, according to Piaget's theory adolescents acquire formal operational thought. The hallmark of this type of thinking is the ability to think abstractly or to consider possibilities and ideas about circumstances never directly experienced. Thinking abstractly is only one characteristic of adult thought, however. If you compare a 15 year-old with someone in their late 30s, you would probably find that the latter considers not only what is possible, but also what is likely. Why the change? The adult has gained experience and understands why possibilities do not always become realities. *They learn to base decisions on what is realistic and practical, not idealistic, and can make adaptive choices. Adults are also not as*

influenced by what others think. This advanced type of thinking is referred to as **Postformal Thought** (Sinnott, 1998).

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 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 who were considered angels or devils 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.

7.8: Education and a Career

According to the National Center for Higher Education Management Systems (NCHEMS) (2016a), in the United States about 84% of 18 to 24 year olds have a high school diploma or GED. Nearly 9 out of every 10 adults aged 25 and up (88%) in the United States have a high school diploma or its equivalent (Ryan & Bauman, 2016). College is an important aspect of the lives of many young adults in the United States, with 36% of 18 to 24 year olds (NCHEMS, 2016b) and 7% of 25 to 49 year olds attending college (NCHEMS, 2016c). More than half of those 25 and older (59%) have completed some college, and 1 in 3 (32.5%) have a bachelor's degree or higher, with slightly more women (33%) than men (32%) holding a college degree (Ryan & Bauman, 2016). Fifty-six percent of four-year college students earn a Bachelor's degree within six years (NCHEMS, 2016d).

The rate of college attainment has grown more slowly in the United States than in a number of other nations in recent years (OCED, 2014). This may be due to fact that the cost of attaining a degree is higher in the U.S. than in many other nations.

Tabl

State	Avera
Illinois	28
Wisconsin	28
Michigan	29
Indiana	29
Utah (lowest)	18
Delaware (highest)	33

In 2014, 7 out of every 10 graduates in the U.S. owed an average of nearly $29,000, up 2 percent from the previous year (The Institute for College Access and Success [TICAS], 2015). As the level of State funding of higher education declines, students are finding that the cost of college is outpacing the rate of inflation, Pell grant increases, and other student scholarships. One in six students are funding their education through personal loans (TICAS, 2015). See Table 7.1 for a comparison of several U.S. States regarding student debt.

Is college worth the time and investment? College is certainly a substantial investment each year, with the financial burden falling on students and their families in the U.S., and mainly by the government in many other nations. Nonetheless, the benefits both to the individual and the society outweighs the initial costs. As can be seen in Figure 7.16, those in America with the most advanced degrees earn the highest income and have the lowest unemployment.

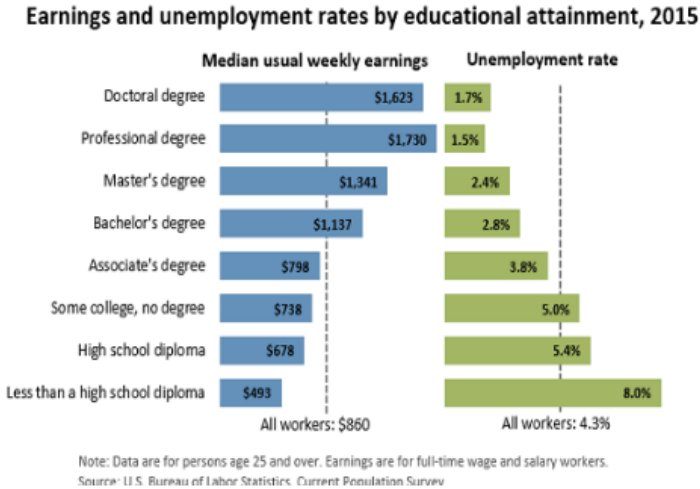


Figure 7.16: Earnings and unemployment rates by educational attainment.

Worldwide, over 80% of college educated adults are employed, compared with just over 70% of those with a high school or equivalent diploma, and only 60% of those with no high school diploma (OECD, 2015). Those with a college degree will earn more over the course of their life time. Moreover, the benefits of college education go beyond employment and finances. The OECD found that around the world, adults with higher educational attainment were more likely to volunteer, felt they had more control over their lives, and thus were more interested in the world around them. Studies of U.S. college students find that they gain a more distinct identity and become more socially competent, less dogmatic and ethnocentric compared to those not in college (Pascarella, 2006).

Career Development and Employment

Work plays a significant role in the lives of people, and emerging and

early adulthood is the time when most of us make choices that will establish our careers. Career development has a number of stages:

- **Stage One:** As children we may select careers based on what appears glamorous or exciting to us (Patton & McMahon, 1999). There is little regard in this stage for whether we are suited for our occupational choices.
- **Stage Two:** In the second stage, teens include their abilities and limitations, in addition to the glamour of the occupation when narrowing their choices.
- **Stage Three:** Older teens and emerging adults narrow their choices further and begin to weigh more objectively the requirements, rewards, and downsides to careers, along with comparing possible careers with their own interests, values, and future goals (Patton & McMahon, 1999). However, some young people in this stage "fall-into" careers simply because these were what were available at the time, because of family pressures to pursue particular paths, or because these were high paying jobs, rather than from an intrinsic interest in that career path (Patton & McMahon, 1999).
- **Stage Four:** Super (1980) suggests that by our mid to late thirties, many adults settle in their careers. Even though they might change companies or move up in their position, there is a sense of continuity and forward motion in their career. However, some people at this point in their working life may feel trapped, especially if there is little opportunity for advancement in a more dead-end job.

How have things changed for Millennials compared with previous generations of early adults? In recent years, young adults are more likely to find themselves job-hopping, and periodically returning to school for further education and retraining than in prior generations. However, researchers find that occupational interests remain fairly stable. Thus, despite the more frequent change in jobs, most people are generally seeking jobs with similar interests rather

than entirely new careers (Rottinghaus, Coon, Gaffey & Zytowski, 2007).



Figure 7.17: Searching for jobs.

Recent research also suggests that Millennials are looking for something different in their place of employment. According to a recent Gallup poll report (2016), Millennials want more than a paycheck, they want a purpose. Unfortunately, only 29% of Millennials surveyed by Gallup reported that they were "engaged" at work. In fact, they report being less engaged than Gen Xers and Baby Boomers; with 55% of Millennials saying they are not engaged at all with their job. This indifference to their workplace may explain the greater tendency to switch jobs. With their current job giving them little reason to stay, they are more likely to take any new opportunity to move on. Only half of Millennials saw themselves working at the same company a year later. Gallup estimates that this employment turnover and lack of engagement costs businesses $30.5 billion a year.

NEETs: Around the world, teens and young adults were some of the hardest hit by the economic downturn in recent years (Desilver, 2016). Consequently, a number of young people have become

NEETs, *neither employed nor in education or training*. While the number of young people who are NEETs has declined, there is concern that "without assistance, economically inactive young people won't gain critical job skills and will never fully integrate into the wider economy or achieve their full earning potential" (Desilver, 2016, para. 3). In Europe, where the rates of NEETs are persistently high, there is also concern that having such large numbers of young adults with little opportunity may increase the chances of social unrest.

In the United States, in 2015 nearly 17% of 16 to 29 year-olds were neither employed nor in school, according to data Desilver (2016) obtained from the Bureau of Labor Statistics. This is down slightly from 2013, when approximately 18.5% of this age group fit the category. As noted in Table 7.2, more women than men find themselves unemployed and not in school. Additionally, most NEETs have high school or less education, and Asians are less likely to be NEETs than any other ethnic group.

The rate of NEETs varies in European nations, with higher rates found in nations that have been the hardest hit by economic recessions and government austerity measures. For example, more than 25% of those 15-29 (European data use a lower age group: 15 rather than 16) in Greece and Italy are unemployed and not seeking or receiving further education. In contrast, countries less affected by an economic downturn, such as Denmark, had much lower rates (7.3%).

Note: Hispanics can be of any race. Totals may not sum to

Total	
Male	
Female	
16-19	
20-24	
25-29	
White	
Black	
Asian	
Other	
Hispanic	
Less than HS grad	
HS grad, no college	
Some college	
Associate degree	
Bachelor's degree or higher	

What role does gender play on career and employment? Gender also has an impact on career choices. Despite the rise in the number of women who work outside of the home, there are some career fields that are still pursued more by men than women. Jobs held by women still tend to cluster in the service sector, such as education, nursing, and child-care worker. While in more technical and scientific careers, women are greatly outnumbered by men. Jobs that have been traditionally held by women tend to have lower status, pay, benefits, and job security (Ceci & Williams, 2007).

In recent years, women have made inroads into fields once dominated by males, and today women are almost as likely as men to become medical doctors or lawyers. Despite these changes, women are more likely to have lower-status, and thus less pay than men in these professions. For instance, women are more likely to be a family practice doctor than a surgeon, or are less likely to make partner in a law firm (Ceci & Williams, 2007).

Sexism

Sexism or gender discrimination *is prejudice or discrimination based on a person's sex or gender.* Sexism can affect any sex that is marginalized or oppressed in a society; however, it is particularly documented as affecting females. It has been linked to stereotypes and gender roles and includes the belief that males are intrinsically superior to other sexes and genders. Extreme sexism may foster sexual harassment, rape, and other forms of sexual violence.

Sexism can exist on a societal level, such as in hiring, employment opportunities, and education. In the United States, women are less likely to be hired or promoted in male-dominated professions, such as engineering, aviation, and construction (Blau, Ferber, & Winkler, 2010; Ceci & Williams, 2011). In many areas of the world, young girls are not given the same access to nutrition, healthcare, and education as boys. Sexism also includes people's expectations of

how members of a gender group should behave. For example, women are expected to be friendly, passive, and nurturing; when a woman behaves in an unfriendly or assertive manner, she may be disliked or perceived as aggressive because she has violated a gender role (Rudman, 1998). In contrast, a man behaving in a similarly unfriendly or assertive way might be perceived as strong or even gain respect in some circumstances.



Figure 7.18: Occupational sexism involves wage discrimination.

Occupational sexism *involves discriminatory practices, statements, or actions, based on a person's sex, that occur in the workplace.* One form of occupational sexism is wage discrimination. In 2008, the Organisation for Economic Co-operation and Development (OECD) found that while female employment rates have expanded, and gender employment and wage gaps have narrowed nearly everywhere, on average women still have a 20 percent less chance to have a job. The Council of Economic Advisors (2015) found that despite women holding 49.3% of the jobs, they are paid only 78 cents for every $1.00 a man earns. It also found that despite the fact that many countries, including the U.S., have established anti-discrimination laws, these laws are difficult to enforce. In the United

States, women account for 47% of the overall labor force, yet they make up only 6 percent of corporate CEOs and top executives. Some researchers see the root cause of this situation in the tacit discrimination based on gender, conducted by current top executives and corporate directors (who are primarily male).

7.9: Psychosocial Development in Emerging and Early Adulthood

Learning Objectives: Psychosocial Development in Emerging and Early Adulthood

- Describe the relationship between infant and adult temperament
- Explain personality in early adulthood
- Explain the five factor model of personality
- Describe adult attachment styles
- Explain adult gender identity
- Describe gender roles

Temperament and Personality in Adulthood

If you remember from chapter 3, **temperament** is defined as *the innate characteristics of the infant, including mood, activity level, and emotional reactivity, noticeable soon after birth.* Does one's temperament remain stable through the lifespan? Do shy and inhibited babies grow up to be shy adults, while the sociable child continues to be the life of the party? Like most developmental research the answer is more complicated than a simple yes or no. Chess and Thomas (1987), who identified children as easy, difficult, slow-to-warm-up or blended, found that children identified as easy grew up to became well-adjusted adults, while those who exhibited a difficult temperament were not as well-adjusted as adults. Jerome Kagan (2002) has studied the temperamental category of inhibition

to the unfamiliar in children. Infants exposed to unfamiliarity reacted strongly to the stimuli and cried loudly, pumped their limbs, and had an increased heart rate. Research has indicated that these highly reactive children show temperamental stability into early childhood, and Bohlin and Hagekull (2009) found that shyness in infancy was linked to social anxiety in adulthood.

An important aspect of this research on inhibition was looking at the response of the amygdala, which is important for fear and anxiety, especially when confronted with possible threatening events in the environment. Using functional magnetic resonance imaging (FMRIs) young adults identified as strongly inhibited toddlers showed heightened activation of the amygdala when compared to those identified as uninhibited toddlers (Davidson & Begley, 2012).

The research does seem to indicate that temperamental stability holds for many individuals through the lifespan, yet we know that one's environment can also have a significant impact. Recall from our discussion on **epigenesis** or *how environmental factors are thought to change gene expression by switching genes on and off.* Many cultural and environmental factors can affect one's temperament, including supportive versus abusive child-rearing, socioeconomic status, stable homes, illnesses, teratogens, etc. Additionally, individuals often choose environments that support their temperament, which in turn further strengthens them (Cain, 2012). In summary, because temperament is genetically driven, genes appear to be the major reason why temperament remains stable into adulthood. In contrast, the environment appears mainly responsible for any change in temperament (Clark & Watson, 1999).

Everybody has their own unique **personality**; *that is, their characteristic manner of thinking, feeling, behaving, and relating to others* (John, Robins, & Pervin, 2008). Personality traits refer to these characteristic, routine ways of thinking, feeling, and relating to others. Personality integrates one's temperament with cultural and environmental influences. Consequently, there are signs or indicators of these traits in childhood, but they become particularly

evident when the person is an adult. Personality traits are integral to each person's sense of self, as they involve what people value, how they think and feel about things, what they like to do, and, basically, what they are like most every day throughout much of their lives.

Five-Factor Model

There are hundreds of different personality traits, and all of these traits can be organized into the broad dimensions referred to as the Five-Factor Model (John, Naumann, & Soto, 2008). These five broad domains include: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism (Think OCEAN to remember). This applies to traits that you may use to describe yourself. Table 7.3 provides illustrative traits for low and high scores on the five domains of this model of personality.

Table

Dimension	Description
Openness to experience	A general appreciation for art, emotion, adventure, unusual id curiosity, and variety of experience
Conscientiousness	A tendency to show self-discipline, act dutifully, and aim fo
Extraversion	The tendency to experience positive emotions and to seek out s company of others
Agreebleness	A tendency to be compassionate and cooperative rather than antagonistic toward others; reflects individual differences in ge social harmony
Neuroticism	The tendency to experience negative emotions, such as ang depression; sometimes called "emotional instabil

Does personality change throughout adulthood? Previously the answer was no, but contemporary research shows that although some people's personalities are relatively stable over time, others' are not Lucas & Donnellan, 2011; Roberts & Mroczek, 2008). Longitudinal studies reveal average changes during adulthood in the expression of some traits (e.g., neuroticism and openness decrease with age and conscientiousness increases) and individual differences in these patterns due to idiosyncratic life events (e.g., divorce, illness). Longitudinal research also suggests that adult personality traits, such as conscientiousness, predict important life

outcomes including job success, health, and longevity (Friedman et al., 1993; Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007).

The Harvard Health Letter (2012) identifies research correlations between conscientiousness and lower blood pressure, lower rates of diabetes and stroke, fewer joint problems, being less likely to engage in harmful behaviors, being more likely to stick to healthy behaviors, and more likely to avoid stressful situations. Conscientiousness also appears related to career choices, friendships, and stability of marriage. Lastly, a person possessing both self-control and organizational skills, both related to conscientiousness, may withstand the effects of aging better and have stronger cognitive skills than one who does not possess these qualities.

7.10: Attachment in Young Adulthood

Hazan and Shaver (1987) described the attachment styles of adults, using the same three general categories proposed by Ainsworth's research on young children; secure, avoidant, and anxious/ambivalent. Hazan and Shaver developed three brief paragraphs describing the three adult attachment styles. Adults were then asked to think about romantic relationships they were in and select the paragraph that best described the way they felt, thought, and behaved in these relationships (Table 7.4).

***Table* 7.4: Which of t**

Secure	I find it relatively easy to get close to others and am comfor
Avoidant	I am somewhat uncomfortable being close to others. I find i
Nervous/Ambivalent	I find that others are reluctant to get as close as I would like.

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 (see Figure 7.19).



Figure 7.19: Four-Category Model with the Two- Dimensions of Attachment. Source: Adapted from Fraley, et al., 2015. p. 355

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 dismiss the importance of relationships. They trust themselves, but do not trust others, thus do not 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 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 al., 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 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." Frazier, Byer, Fischer, Wright, and DeBord (1996) 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, his or her partner was likely to experience a change in the same direction.



Figure 7.20: Sharing food, celebrations and traditions are some of the ways we establish secure attachments with our loved ones from an early age. [Image: skeeze]

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 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 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 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 his or her 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.

Relationships with Parents and Siblings

In early adulthood the parent-child relationship has to transition toward a relationship between two adults. This involves a reappraisal of the relationship by both parents and young adults. One of the biggest challenges for parents, especially during emerging adulthood, is coming to terms with the adult status of their children. Aquilino (2006) suggests that parents who are reluctant or unable to do so may hinder young adults' identity development. This problem becomes more pronounced when young adults still reside with their parents. Arnett (2004) reported that leaving home often helped promote psychological growth and independence in early adulthood.

Sibling relationships are one of the longest-lasting bonds in people's lives. Yet, there is little research on the nature of sibling

relationships in adulthood (Aquilino, 2006). What is known is that the nature of these relationships change, as adults have a choice as to whether they will maintain a close bond and continue to be a part of the life of a sibling. Siblings must make the same reappraisal of each other as adults, as parents have to with their adult children. Research has shown a decline in the frequency of interactions between siblings during early adulthood, as presumably peers, romantic relationships, and children become more central to the lives of young adults. Aquilino (2006) suggests that the task in early adulthood may be to maintain enough of a bond so that there will be a foundation for this relationship in later life. Those who are successful can often move away from the "older-younger" sibling conflicts of childhood, toward a more equal relationship between two adults. Siblings that were close to each other in childhood are typically close in adulthood (Dunn, 1984, 2007), and in fact, it is unusual for siblings to develop closeness for the first time in adulthood. Overall, the majority of adult sibling relationships are close (Cicirelli, 2009).

Erikson: Intimacy vs. Isolation

Erikson's (1950, 1968) sixth stage focuses on establishing intimate relationships or risking social isolation. Intimate relationships are more difficult if one is still struggling with identity. Achieving a sense of identity is a life-long process, as there are periods of identity crisis and stability. However, once identity is established intimate relationships can be pursued. These intimate relationships include acquaintanceships and friendships, but also the more important close relationships, which are the long-term romantic relationships that we develop with another person, for instance, in a marriage (Hendrick & Hendrick, 2000).

7.11: 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.*



Figure 7.21: Birds of a feather flock together. Black-headed gulls in Colwick Country Park, UK.

Similarity: One important factor in attraction is a perceived similarity in values and beliefs between the partners (Davis & Rusbult, 2001). Similarity is important for relationships because it

is more convenient if both partners like the same activities and because similarity supports one's values. We can feel better about ourselves and our choice of activities if we see that our partner also enjoys doing the same things that we do. *Having others like and believe in the same things we do makes 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 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 (Brooks-Gunn & Lewis, 1981), 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 (Mita, Dermer, & Knight, 1977). 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.

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. Leslie Zebrowitz and her colleagues found that we like people of our own race in part because they are perceived as similar to us (Zebrowitz, Bornstad, & Lee, 2007).

7.12: Friendship

In our twenties, 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 women tend to differ from those shared by men (Tannen, 1990). 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. These differences in approaches lead to problems when men and women come together. 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.

Friendships between men and women 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.

7.13: Love

Sternberg (1988) suggests that there are three main components of love: Passion, intimacy, and commitment (Figure 7.22). 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 the 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.

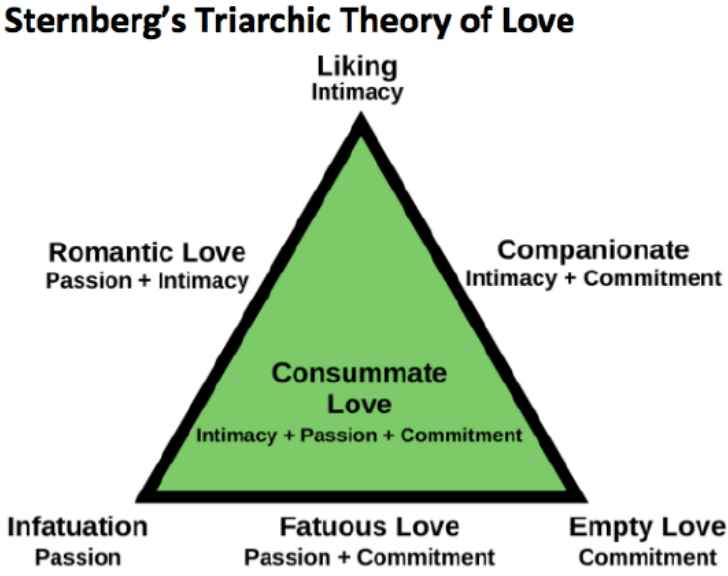


Figure 7.22: Sternberg's Triarchic Theory of Love.

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 seeking 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 physical attraction and an image of what one "thinks" the other is all about.

Fatuous Love: However, 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.

Empty Love: This type of love may be found later in a relationship or in a relationship that was formed to meet needs other than intimacy or passion, including financial needs, childrearing assistance, or attaining/maintaining 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.

However, they do not share ideas or feelings with each other and have no physical attraction for one another.

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. 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. However, their physical attraction may have never been strong or may have just died out over time. Nevertheless, partners are good friends and committed to one another.

Consummate Love: Intimacy, passion, and commitment are present in consummate love. This is often perceived by western cultures as "the ideal" type of love. The couple shares passion; the spark has not died, and the closeness is there. They feel like best friends, as well as lovers, and they are committed to staying together.

7.14: Adult Lifestyles

Singlehood: Being single is the most common lifestyle for people in their early 20s, and there has been an increase in the number of adults staying single. In 1960, only about 1 in 10 adults age 25 or older had never been married, in 2012 that had risen to 1 in 5 (Wang & Parker, 2014). While just over half (53%) of unmarried adults say they would eventually like to get married, 32 percent are not sure, and 13 percent do not want to get married. It is projected that by the time current young adults reach their mid-40s and 50s, almost 25% of them may not have married. The U.S. is not the only country to see a rise in the number of single adults.

Based on dat

Have not met the
Do not have finan
Not ready to se
Too young to

Table 7.5 lists some of the reasons young adults give for staying single. In addition, adults are marrying later in life, cohabitating, and raising children outside of wedlock in greater numbers than in previous generations. Young adults also have other priorities, such as education, and establishing their careers. This may be reflected by changes in attitudes about the importance of marriage. In a

recent Pew Research survey of Americans, respondents were asked to indicate which of the following statements came closer to their own views:

- "Society is better off if people make marriage and having children a priority"
- "Society is just as well off if people have priorities other than marriage and children"

Slightly more adults endorsed the second statement (50%) than those who chose the first (46%), with the remainder either selecting neither, both equally, or not responding (Wang & Parker, 2014). Young adults age 18-29 were more likely to endorse this view than adults age 30 to 49; 67 percent and 53 percent respectively. In contrast, those age 50 or older were more likely to endorse the first statement (53 percent).

Hooking Up: United States demographic changes have significantly affected the romantic relationships among emerging and early adults. As previously described, the age for puberty has declined, while the times for one's first marriage and first child have been pushed to older ages. This results in a "historically unprecedented time gap where young adults are physiologically able to reproduce, but not psychologically or socially ready to settle down and begin a family and child rearing," (Garcia, Reiber, Massey, & Merriwether, 2012, p. 172). Consequently, according to Bogle (2007, 2008) traditional forms of dating have shifted to more casual **hookups** *that involve uncommitted sexual encounters.*



Figure 7.23: Casual hookup.

Even though most research on hooking up involves college students, 70% of sexually active 12-21 year olds reported having had uncommitted sex during the past year (Grello, Welsh, Harper, & Dickson, 2003). Additionally, Manning, Giordano and Longmore (2006) found that 61% of sexually active seventh, ninth, and eleventh graders reported being involved in a sexual encounter outside of a dating relationship.

Friends with Benefits

Hookups are different than those relationships that involve continued mutual exchange. These relationships are often referred to as **Friends with Benefits** (FWB) or "Booty Calls." *These relationships involve friends having casual sex without commitment.* Hookups do not include a friendship relationship. Bisson and Levine (2009) found that 60% of 125 undergraduates reported a FWB relationship. The concern with FWB is that one partner may feel more romantically invested than the other (Garcia et al., 2012).

Hooking up Gender Differences: When asked about their

motivation for hooking up, both males and females indicated physical gratification, emotional gratification, and a desire to initiate a romantic relationship as reasons (Garcia & Reiber, 2008). Although males and females are more similar than different in their sexual behaviors, a consistent finding among the research is that males demonstrate a greater permissiveness to casual sex (Oliver & Hyde, 1993). In another study involving 16,288 individuals across 52 nations, males reported a greater desire of sexual partner variety than females, regardless of relationship status or sexual orientation (Schmitt et al., 2003). This difference can be attributed to gender role expectations for both males and females regarding sexual promiscuity. Additionally, the risks of sexual behavior are higher for females and include unplanned pregnancy, increased sexually transmitted diseases, and susceptibility to sexual violence (Garcia et al., 2012).

Although hooking up relationships have become normalized for emerging adults, some research indicates that the majority of both sexes would prefer a more traditional romantic relationship (Garcia et al., 2012). Additionally, Owen and Fincham (2011) surveyed 500 college students with experience with hookups, and 65% of women and 45% of men reported that they hoped their hookup encounter would turn into a committed relationship. Further, 51% of women and 42% of men reported that they tried to discuss the possibility of starting a relationship with their hookup partner. Casual sex has also been reported to be the norm among gay men, but they too indicate a desire for romantic and companionate relationships (Clarke & Nichols, 1972).

Emotional Consequences of Hooking up: Concerns regarding hooking up behavior certainly are evident in the research literature. One significant finding is the high comorbidity of hooking up and substance use. Those engaging in non-monogamous sex are more likely to have used marijuana, cocaine, and alcohol, and the overall risks of sexual activity are drastically increased with the addition of alcohol and drugs (Garcia et al., 2012). Regret has also been expressed, and those who had the most regret after hooking up also

had more symptoms of depression (Welsh, Grello, & Harper, 2006). Hook ups were also found to lower self-esteem, increase guilt, and foster feelings of using someone or feeling used. Females displayed more negative reactions than males, and this may be due to females identifying more emotional involvement in sexual encounters than males.

Hooking up can best be explained by a biological, psychological, and social perspective. Research indicates that emerging adults feel it is necessary to engage in hooking up behavior as part of the sexual script depicted in the culture and media. Additionally, they desire sexual gratification. However, they also want a more committed romantic relationship and may feel regret with uncommitted sex.

Online Dating: The ways people are finding love has changed with the advent of the Internet. In a poll, 49% of all American adults reported that either themselves or someone they knew had dated a person they met online (Madden & Lenhart, 2006). Online dating has also increased dramatically among those age 18 to 24. Today, one in five emerging adults report using a mobile dating app, while in 2013 only 5% did, and 27% report having used online dating, almost triple the rate in 2013 (Smith & Anderson, 2016). As Finkel, Burnette, and Scissors (2007) found, social networking sites and the Internet perform three important tasks. Specifically, sites provide individuals with access to a database of other individuals who are interested in meeting someone. Dating sites generally reduce issues of proximity, as individuals do not have to be close in proximity to meet. Also, they provide a medium in which individuals can communicate with others. Finally, some Internet dating websites advertise special matching strategies, based on factors such as personality, hobbies, and interests, to identify the "perfect match" for people looking for love online. Social networking sites have provided opportunities for meeting others you would not have normally met. However, social networking sites can also be forums for unsuspecting people to be duped, as the person may not be who he or she says.

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. 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. Someone who has been abused may feel safer in virtual relationships. 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.

To evaluate what individuals are looking for online, Menkin, Robles, Wiley and Gonzaga (2015) reviewed data from an eHarmony.com relationship questionnaire completed by a cross-sectional representation of 5,434 new users. Their results indicated that users consistently valued communication and characteristics such as personality and kindness over sexual attraction. Females valued communication over sexual attraction even more when compared to males, and older users rated sexual attraction as less important than younger users. Alterovitz and Mendelsohn (2011) analyzed 600 Internet personal ads across the lifespan, and found that men sought physical attractiveness and offered status related information more than women, while women were more selective than men and sought status more than men. These findings were consistent with previous research on gender differences regarding the importance of physical/sexual attraction.

Cohabitation: In American society, as well as in a number of other cultures, cohabitation has become increasingly commonplace.

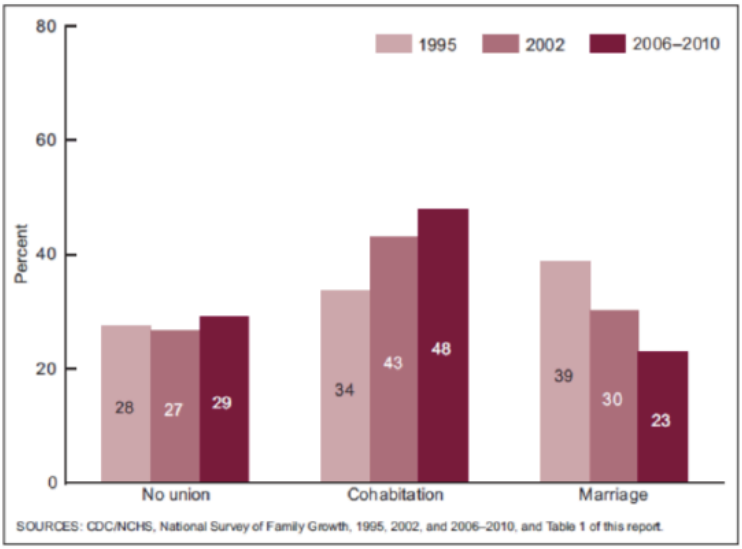


Figure 7.24: Type of first unions in women age 15- 44 in 1995, 2002, and 2006-2010.

As shown in Figure 7.26, in 1995, 34 percent of women cohabitated as the first union with their partner, and by 2010 almost half of all women did (Copen, Daniels, & Mosher, 2013). Copen and colleagues also found that from 1995 to 2010 the median length of the cohabitation relationship has increased regardless of whether the relationship resulted in marriage, remained intact, or had since dissolved. In 1995 the median length of the cohabitation relationship was 13 months, whereas it was 22 months by 2010. Cohabitation for all racial/ethnic groups, except for Asian women increased between 1995 and 2010 (Table 7.6). Forty percent of the cohabitations transitioned into marriage within three years, 32% were still cohabitating, and 27% of cohabitating relationships had dissolved within the three years.

Table 7.6: **Percentage of w**

Hispanic	
White	
Black	
Asian	

Three explanations have been given for the rise of cohabitation in Western cultures. The first notes that the increase in individualism and secularism, and the resulting decline in religious observance, has led to greater acceptance and adoption of cohabitation (Lesthaeghe & Surkyn, 1988). Moreover, the more people view cohabitating couples, the more normal this relationship becomes, and the more couples who will then cohabitate. Thus, cohabitation is both a cause and the effect of greater cohabitation.

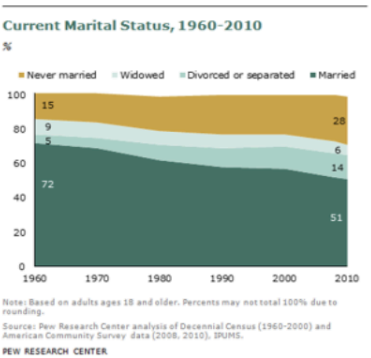
A second explanation focuses on the economic changes. The growth of industry and the modernization of many cultures has improved women's social status, leading to greater gender equality and sexual freedom, with marriage no longer being the only long-term relationship option (Bumpass, 1990). A final explanation suggests that the change in employment requirements, with many jobs now requiring more advanced education, has led to a competition between marriage and pursuing post-secondary education (Yu & Xie, 2015). This might account for the increase in the age of first marriage in many nations. Taken together, the greater acceptance of premarital sex, and the economic and educational changes would lead to a transition in relationships.

Overall, cohabitation may become a step in the courtship process or may, for some, replace marriage altogether.

Similar increases in cohabitation have also occurred in other industrialized countries. For example, rates are high in Great Britain, Australia, Sweden, Denmark, and Finland. In fact, more children in Sweden are born to cohabiting couples than to married couples. The lowest rates of cohabitation in industrialized countries are in Ireland, Italy, and Japan (Benokraitis, 2005).

Cohabitation in Non-Western Cultures, The Philippines and China: Similar to other nations, young people in the Philippines are more likely to delay marriage, to cohabitate, and to engage in premarital sex as compared to previous generations (Williams, Kabamalan, & Ogena, 2007). Despite these changes, many young people are still not in favor of these practices. Moreover, there is still a persistence of traditional gender norms as there are stark differences in the acceptance of sexual behavior out of wedlock for men and women in Philippine society. Young men are given greater freedom. In China, young adults are cohabitating in higher numbers than in the past (Yu & Xie, 2015). Unlike many Western cultures, in China adults with higher, rather than lower, levels of education are more likely to cohabitate. Yu and Xie suggest this may be due to seeing cohabitation as being a more "innovative" behavior and that those who are more highly educated may have had more exposure to Western culture.

Marriage Worldwide: Cohen (2013) reviewed data assessing most of the world's countries and found that marriage has declined universally during the last several decades. This decline has occurred in both poor and rich countries, however, the countries with the biggest drops in marriage were mostly rich: France, Italy, Germany, Japan and the U.S. Cohen states that the decline is not only due to individuals delaying marriage, but also because of high rates of non-marital cohabitation. Delayed or reduced marriage is associated with higher income and lower fertility rates that are reflected worldwide.



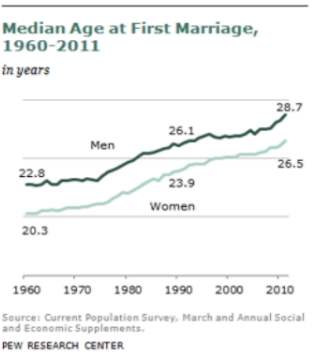


Figure 7.25: Marriage in the U.S.

Marriage in the United States: In 1960, 72% of adults age 18 or older were married, in 2010 this had dropped to barely half (Wang & Taylor, 2011). At the same time, the age of first marriage has been increasing for both men and women. In 1960, the average age for first marriage was 20 for women and 23 for men. By 2010 this had increased to 26.5 for women and nearly 29 for men (Figure 7.25). Many of the explanations for increases in singlehood and cohabitation previously given can also account for the drop and delay in marriage.



Figure 7.26: Photo courtesy Salvor Gissurardottir.

Same-Sex Marriage: In June 26, 2015, the United States Supreme Court ruled that the Constitution guarantees same-sex marriage. The decision indicated that limiting marriage to only heterosexual couples violated the 14th amendment's guarantee of equal protection under the law. This ruling occurred 11 years after same-sex marriage was first made legal in Massachusetts, and at the time of the high court decision, 36 states and the District of Columbia had legalized same sex marriage. Worldwide, 23 countries currently have national laws allowing gays and lesbians to marry (Pew Research Center, 2015). As can be seen in Table 7.7, these countries are located mostly in Europe and the Americas.

***Table* 7.7: Pew Researc**

		Count
Argentina (2010)	Denmark (2012)	
Belgium (2003)	England/Wales (2013)	
Brazil (2013)	Finland (2015)	
Canada (2005)	France (2013)	
Colombia (2016)	Greenland (2015)	
		Countrie

Cultural Influences on Marriage: Many cultures have both explicit and unstated rules that specify who is an appropriate mate. Consequently, mate selection is not completely left to the individual. Rules of **endogamy** *indicate the groups we should marry within and those we should not marry in* (Witt, 2009). For example, many cultures specify that people marry within their own race, social

class, age group, or religion. Endogamy reinforces the cohesiveness of the group. Additionally, these rules encourage **homogamy** *or marriage between people who share social characteristics.* The majority of marriages in the U. S. are homogamous with respect to race, social class, age and to a lesser extent, religion. Homogamy is also seen in couples with similar personalities and interests.

Arranged Marriages and Elopement: Historically, marriage was not a personal choice, but one made by one's family. Arranged marriages often ensured proper transference of a family's wealth and the support of ethnic and religious customs. Such marriages were a marriage of families rather than of individuals. In Western Europe, starting in the 18th century the notion of personal choice in a marital partner slowly became the norm. Arranged marriages were seen as "traditional" and marriages based on love "modern". Many of these early "love" marriages were obtained by eloping (Thornton, 2005).

Around the world, more and more young couples are choosing their partners, even in nations where arranged marriages are still the norm, such as India and Pakistan. Desai and Andrist (2010) found that only 5% of the women they surveyed, aged 25-49, had a primary role in choosing their partner. Only 22% knew their partner for more than one month before they were married. However, the younger cohort of women was more likely to have been consulted by their families before their partner was chosen than were the older cohort, suggesting that family views are changing about personal choice. Allendorf (2013) reports that this 5% figure may also underestimate young people's choice, as only women were surveyed. Many families in India are increasingly allowing sons veto power over the parents' choice of his future spouse, and some families give daughters the same say.

Marital Arrangements in India: As the number of arranged marriages in India is declining, elopement is increasing. Allendorf's (2013) study of a rural village in India, describes the elopement process. In many cases the female leaves her family home and goes to the male's home, where she stays with him and his parents. After

a few days, a member of his family will inform her family of her whereabouts, and gain consent for the marriage. In other cases, where the couple anticipate some degree of opposition to the union, the couple may run away without the knowledge of either family, often going to a relative of the male. After a few days, the couple comes back to the home of his parents, where at that point consent is sought from both families. Although, in some cases families may sever all ties with their child or encourage him or her to abandon the relationship, typically, they agree to the union as the couple have spent time together overnight. Once consent has been given, the couple lives with his family and are considered married. A more formal ceremony takes place a few weeks or months later.

Arranged marriages are less common in the more urban regions of India than they are outside of the cities. In rural regions, often the family farm is the young person's only means of employment. Thus, going against family choices may carry bigger consequences. Young people who live in urban centers have more employment options. As a result, they are often less economically dependent on their families, and may feel freer to make their own choices. Thornton (2005) suggests these changes are also being driven by mass media, international travel, and general Westernization of ideas. Besides India, China, Nepal, and several nations in Southeast Asia have seen a decline in the number of arranged marriages, and an increase in elopement or couples choosing their own partners with their families' blessings (Allendorf, 2013).

Predictors of Marital Harmony: 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 good marriage does not depend on compatibility. Rather, the way that partners communicate to 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, and 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. Stonewalling, or shutting someone out, is the strongest sign that a relationship is destined to fail.

Gottman, Carrere, Buehlman, Coan, and Ruckstuhl (2000) researched the perceptions newlyweds had about their partner and marriage. The Oral History Interview used in the study, which looks at eight variables in marriage including: Fondness/affection, we-ness, expansiveness/ expressiveness, negativity, disappointment, and three aspects of conflict resolution (chaos, volatility, glorifying the struggle), was able to predict the stability of the marriage with 87% accuracy at the four to six year-point and 81% accuracy at the seven to nine year-point. Gottman (1999) developed workshops for couples to strengthen their marriages based on the results of the Oral History Interview. Interventions include increasing the positive regard for each other, strengthening their friendship, and improving communication and conflict resolution patterns.

Accumulated Positive Deposits: When there is a positive balance of relationship deposits this can help the overall relationship in times of conflict. For instance, some research indicates that a husband's level of enthusiasm in everyday marital interactions was related to a wife's affection in the midst of conflict (Driver & Gottman, 2004), showing that being pleasant and making deposits can change the nature of conflict. Also, Gottman and Levenson (1992) found that couples rated as having more pleasant interactions, compared with couples with less pleasant interactions, reported marital problems as less severe, higher marital satisfaction, better physical health, and less risk for divorce. Finally, Janicki, Kamarck, Shiffman, and Gwaltney (2006) showed that the intensity of conflict with a spouse predicted marital satisfaction,

unless there was a record of positive partner interactions, in which case the conflict did not matter as much. Again, it seems as though having a positive balance through prior positive deposits helps to keep relationships strong even in the midst of conflict.

7.15: Intimate Partner Abuse

Violence in romantic relationships is a significant concern for women in early adulthood as females aged 18 to 34 generally experience the highest rates of intimate partner violence. The last National Intimate Partner and Sexual Violence Survey (NISVS) was conducted in 2011 (Breiding et al., 2014). The NISVS examines the prevalence of intimate partner violence, sexual violence, and stalking among women and men in the United States over the respondent's lifetime and during the 12 months before the interview. A total of 6,879 women and 5,848 men completed the survey. Based on the results, women are disproportionately affected by intimate partner violence, sexual violence, and stalking.

Results included:

- Nearly 1 in 5 women and 1 in 59 men have been raped in their lifetime.
- Almost 1 in 4 women have been the victim of severe physical violence by an intimate partner, while 1 in 7 men have experienced the same.
- A little over 1 in 6 women have been stalked during their lifetime, compared to 1 in 19 men.
- More than 1 in 4 women and more than 1 in 10 men have experienced contact sexual violence, physical violence, or stalking by an intimate partner and reported significant short- or long-term impacts, such as post-traumatic stress disorder symptoms and injury.
- An estimated 1 in 2 individuals experienced at least one act of psychological aggression by an intimate partner during their lifetime.
- Female victims of intimate partner violence experience different patterns of violence (rape, physical violence, stalking) than male victims who most often experienced physical violence.

- Men and women who experienced these forms of violence were more likely to report frequent headaches, chronic pain, difficulty with sleeping, activity limitations, poor physical health, and poor mental health than men and women who did not experience these forms of violence.



Figure 7.27: One woman in four will experience domestic violence.

7.16: Parenthood

Parenthood is undergoing changes in the United States and elsewhere in the world. Children are less likely to be living with both parents, and women in the United States have fewer children than they did previously. The average fertility rate of women in the United States was about seven children in the early 1900s and has remained relatively stable at 2.1 since the 1970s (Hamilton, Martin, & Ventura, 2011; Martinez, Daniels, & Chandra, 2012). Not only are parents having fewer children, the context of parenthood has also changed. Parenting outside of marriage has increased dramatically among most socioeconomic, racial, and ethnic groups, although college-educated women are substantially more likely to be married at the birth of a child than are mothers with less education (Dye, 2010).



Figure 7.28: Changes in parenthood.

People are having children at older ages, too. This is not surprising given that many of the age markers for adulthood have been delayed, including marriage, completing education, establishing oneself at work, and gaining financial independence. In 2014 the average age for American first-time mothers was 26.3 years (CDC, 2015a). The birth rate for women in their early 20s has declined in recent years, while the birth rate for women in their late 30s has risen. In 2011, 40% of births were to women ages 30 and older. For Canadian women, birth rates are even higher for women in their late 30s than in their early 20s. In 2011, 52% of births were to women ages 30 and older, and the average first-time Canadian mother was 28.5 years old (Cohn, 2013). Improved birth control methods have also enabled women to postpone motherhood. Despite the fact that young people are more often delaying childbearing, most 18- to 29-year-olds want to have children and say that being a good parent is one of the most important things in life (Wang & Taylor, 2011).

Influences on Parenting: Parenting is a complex process in which parents and children influence on another. There are many reasons that parents behave the way they do. The multiple influences on parenting are still being explored. Proposed influences on parenting include: Parent characteristics, child characteristics, and contextual can sociocultural characteristics. (Belsky, 1984; Demick, 1999).

Parent Characteristics: Parents bring unique traits and qualities to the parenting relationship that affect their decisions as parents. These characteristics include the age of the parent, gender, beliefs, personality, developmental history, knowledge about parenting and child development, and mental and physical health. Parents' personalities affect parenting behaviors. Mothers and fathers who are more agreeable, conscientious, and outgoing are warmer and provide more structure to their children. Parents who are more agreeable, less anxious, and less negative also support their children's autonomy more than parents who are anxious and less agreeable (Prinzie, Stams, Dekovic, Reijntes, & Belsky, 2009). Parents who have these personality traits appear to be better able to

respond to their children positively and provide a more consistent, structured environment for their children.



Figure 7.29: The multiple influences on parenting.

Parents' developmental histories, or their experiences as children, also affect their parenting strategies. Parents may learn parenting practices from their own parents. Fathers whose own parents provided monitoring, consistent and age-appropriate discipline, and warmth were more likely to provide this constructive parenting to their own children (Kerr, Capaldi, Pears, & Owen, 2009). Patterns of negative parenting and ineffective discipline also appear from one generation to the next. However, parents who are dissatisfied with their own parents' approach may be more likely to change their parenting methods with their own children.

Child Characteristics: Parenting is bidirectional. *Not only do parents affect their children, children influence their parents.* Child characteristics, such as gender, birth order, temperament, and health status, affect parenting behaviors and roles. For example, an infant with an easy temperament may enable parents to feel more effective, as they are easily able to soothe the child and elicit smiling and cooing. On the other hand, a cranky or fussy infant elicits fewer

positive reactions from his or her parents and may result in parents feeling less effective in the parenting role (Eisenberg et al., 2008). Over time, parents of more difficult children may become more punitive and less patient with their children (Clark, Kochanska, & Ready, 2000; Eisenberg et al., 1999; Kiff, Lengua, & Zalewski, 2011). Parents who have a fussy, difficult child are less satisfied with their marriages and have greater challenges in balancing work and family roles (Hyde, Else-Quest, & Goldsmith, 2004). Thus, child temperament, as previously discussed in chapter 3, is one of the child characteristics that influences how parents behave with their children.

Another child characteristic is the gender of the child. Parents respond differently to boys and girls. Parents often assign different household chores to their sons and daughters. Girls are more often responsible for caring for younger siblings and household chores, whereas boys are more likely to be asked to perform chores outside the home, such as mowing the lawn (Grusec, goodnow, & Cohen, 1996). Parents also talk differently with their sons and daughters, providing more scientific explanations to their sons and using more emotion words with their daughters (Crowley, Callanan, Tenenbaum, & Allen, 2001).

Contextual Factors and Sociocultural Characteristics: The parent–child relationship does not occur in isolation. Sociocultural characteristics, including economic hardship, religion, politics, neighborhoods, schools, and social support, also influence parenting. Parents who experience economic hardship are more easily frustrated, depressed, and sad, and these emotional characteristics affect their parenting skills (Conger & Conger, 2002). Culture also influences parenting behaviors in fundamental ways. Although promoting the development of skills necessary to function effectively in one's community is a universal goal of parenting, the specific skills necessary vary widely from culture to culture. Thus, parents have different goals for their children that partially depend on their culture (Tamis-LeMonda et al., 2008). Parents vary in how much they emphasize goals for independence and individual

achievements, maintaining harmonious relationships, and being embedded in a strong network of social relationships. Other important contextual characteristics, such as the neighborhood, school, and social networks, also affect parenting, even though these settings do not always include both the child and the parent (Brofenbrenner, 1989). Culture is also a contributing contextual factor, as discussed previously in chapter four. For example, Latina mothers who perceived their neighborhood as more dangerous showed less warmth with their children, perhaps because of the greater stress associated with living a threatening environment (Gonzales et al., 2011). The different influences are shown in Figure 7.30.

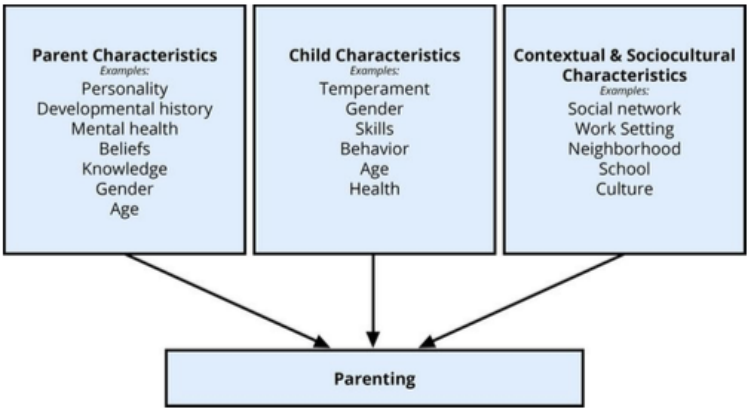


Figure 7.30: Influences on parenting.

7.17: Canadian Resources

Below are resources that provide the Canadian context related to emerging and early adulthood.

- Statistics Canada. (2021). *Canada's educational portrait* [Infographic]. https://www150.statcan.gc.ca/n1/en/pub/11-627-m/11-627-m2017036-eng.pdf?st=wn99rASw
- Statistics Canada. (2019). *Family Matters: Being married or common-law in Canada* [Infographic]. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2019031-eng.htm
- Statistics Canada. (2019). *Family Matters: Under the same roof, living with my parents!* [Infographic]. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2019002-eng.htm
- Statistics Canada. (2021). *First-time mothers in Canada, 2019* [Infographic]. https://www150.statcan.gc.ca/n1/en/pub/11-627-m/11-627-m2020071-eng.pdf?st=32PMjYSO
- Statistics Canada. (2018). *Obesity in Canadian adults, 2016 and 2017* [Infographic]. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2018033-eng.htm
- Statistics Canada. (2019). *Postsecondary graduates in Canada: Class of 2015* [Infographic]. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2019074-eng.htm

7.18: Test your knowledge



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8: MIDDLE ADULTHOOD

Learning Objectives: Physical Development in Middle Adulthood

- Explain the difference between primary and secondary aging
- Describe sensory changes that occur during middle adulthood
- Identify health concerns in middle adulthood
- Explain what occurs during the climacteric for females and males
- Describe sexuality during middle adulthood
- Explain the importance of sleep and consequences of sleep deprivation
- Describe the importance of exercise and nutrition for optimal health
- Describe brain functioning in middle adulthood

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, and research on this developmental period is relatively new as many aspects of midlife are still being explored. In the United States, the large Baby Boom cohort (those born between 1946 and 1964) are now midlife adults (and some even late adults) and this has led to increased interest in this developmental stage. 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 age group.

8.1: Physical Development in Middle Adulthood

Each person experiences age-related physical changes based on many factors: *biological factors, such as molecular and cellular changes, and oxidative damage are called* **primary aging**, while *aging that occurs due to controllable factors, such as an unhealthy lifestyle including lack of physical exercise and poor diet, is called* **secondary aging** (Busse, 1969). These factors are shown in Figure 8.1.



Figure 8.1: Contributors to Aging.

Getting out of shape is not an inevitable part of aging; it is probably due to the fact that middle adults become less physically active and have experienced greater stress. Smoking tobacco, drinking alcohol, poor diet, stress, physical inactivity, and chronic disease such as diabetes or arthritis reduce overall health. However, there are things can be done to combat many of these changes by adopting healthier lifestyles.

Physical Changes

Hair: When asked to imagine someone in middle adulthood, we often picture someone with the beginnings of wrinkles and gray or thinning hair. What accounts for these physical changes? Hair color is due to a pigment called melanin which is produced by hair follicles (Martin, 2014). With aging, the hair follicles produce less melanin and this causes the hair to become gray. Hair color typically starts turning lighter at the temples, but eventually all the hair will become white. For many, graying begins in the 30s, but it is largely determined by your genes. Gray hair occurs earlier in white people and later in Asians.



Figure 8.2: Andre Agassi.

Genes also determine how much hair remains on your head. Almost

everyone has some hair loss with aging, and the rate of hair growth slows with aging. Many hair follicles stop producing new hairs and hair strands become smaller. Men begin showing signs of balding by 30 and some are nearly bald by 60. Male-pattern baldness is related to testosterone and is identified by a receding hairline followed by hair loss at the top of the head. Figure 8.2 shows tennis champion Andre Agassi's characteristic male- patterned baldness. Women can also develop female- patterned baldness as their hair becomes less dense and the scalp becomes visible (Martin, 2014). Sudden hair loss, however, can be a symptom of a health problem.

Skin: Skin continues to dry out and is prone to more wrinkling, particularly on the sensitive face area. Wrinkles, or creases in the skin, are a normal part of aging. As we get older, our skin dries and loses the underlying layer of fat, so our face no longer appears smooth. Loss of muscle tone and thinning skin can make the face appear flabby or drooping. Although wrinkles are a natural part of aging and genetics plays a role, frequent sun exposure and smoking will cause wrinkles to appear sooner. Dark spots and blotchy skin also occur as one ages and are due to exposure to sunlight (Moskowitz, 2014). Blood vessels become more apparent as the skin continues to dry and get thinner.

Sarcopenia: *The loss of muscle mass and strength that occurs with aging* is referred to as **Sarcopenia** (Morley, Baumgartner, Roubenoff, Mayer, & Nair, 2001). Sarcopenia is thought to be a significant factor in the frailty and functional impairment that occurs when older. The decline of growth and anabolic hormones, especially testosterone, and decreased physical activity have been implicated as causes of sarcopenia (Proctor, Balagopal, & Nair, 1998). This decline in muscle mass can occur as early as 40 years of age and contributes significantly to a decrease in life quality, increase in health care costs, and early death in older adults (Karakelides & Nair, 2005). Exercise is certainly important to increase strength, aerobic capacity, and muscle protein synthesis, but unfortunately it does not reverse all the age-related changes that occur. The muscle-to-

fat ratio for both men and women also changes throughout middle adulthood, with an accumulation of fat in the stomach area.

Lungs: The lungs serve two functions: Supply oxygen and remove carbon dioxide. Thinning of the bones with age can change the shape of the rib cage and result in a loss of lung expansion. Age related changes in muscles, such as the weakening of the diaphragm, can also reduce lung capacity. Both of these changes will lower oxygen levels in the blood and increase the levels of carbon dioxide. Experiencing shortness of breath and feeling tired can result (NIH, 2014b). In middle adulthood, these changes and their effects are often minimal, especially in people who are non-smokers and physically active. However, in those with chronic bronchitis, or who have experienced frequent pneumonia, asthma other lung related disorders, or who are smokers, the effects of these normal age changes can be more pronounced.

Sensory Changes

Vision: A normal change of the eye due to age is **presbyopia**, which is Latin for "old vision." It refers to a loss of elasticity in the lens of the eye that makes it harder for the eye to focus on objects that are closer to the person. When we look at something far away, the lens flattens out; when looking at nearby objects tiny muscle fibers around the lens enable the eye to bend the lens. With age these muscles weaken and can no longer accommodate the lens to focus the light. Anyone over the age of 35 is at risk for developing presbyopia. According to the National Eye Institute (NEI) (2016), signs that someone may have presbyopia include:

- Hard time reading small print
- Having to hold reading material farther than arm's distance
- Problems seeing objects that are close
- Headaches

- Eyestrain

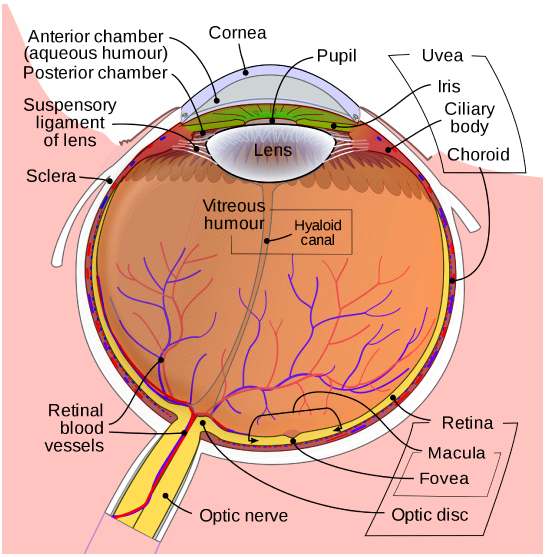


Figure 8.3: Interior of the Human Eye.

Another common eye problem people experience as they age are **floaters**, *little spots or "cobwebs" that float around the field of vision.* They are most noticeable if you are looking at the sky on a sunny day, or at a lighted blank screen. Floaters occur when the vitreous, a gel-like substance in the interior of the eye, slowly shrinks. As it shrinks, it becomes somewhat stringy, and these strands can cast tiny shadows on the retina. In most cases, floaters are harmless, more of an annoyance than a sign of eye problems. However, floaters that appear suddenly, or that darken and obscure vision can be a sign of more serious eye problems, such a retinal tearing, infection, or inflammation. People who are very nearsighted (myopic), have diabetes, or who have had cataract surgery are also more likely to have floaters (NEI, 2009).

During midlife, adults may begin to notice a drop in **scotopic sensitivity**, *the ability to see in dimmer light*. By age 60, the retina receives only one third as much light as it did at age 20, making

working in dimmer light more difficult (Jackson & Owsley, 2000). Night vision is also affected as the pupil loses some of its ability to open and close to accommodate drastic changes in light. Eyes become more sensitive to glare from headlights and street lights making it difficult to see people and cars, and movements outside of our direct line of sight (NIH, 2016c).

Finally, some people experience **dry eye syndrome**, which *occurs when the eye does not produce tears properly, or when the tears evaporate too quickly because they are not the correct consistency* (NEI, 2013). While dry eye can affect people at any age, nearly 5 million Americans over the age of 50 experience dry eye. It affects women more than men, especially after menopause. Women who experienced an early menopause may be more likely to experience dry eye, which can cause surface damage to the eye.

Hearing: Hearing problems increase during middle adulthood. According to a recent UK study (Dawes et al., 2014), the rate of hearing problems in their sample doubled between the ages of 40 and 55 and tripled by age 64. Similar statistics are found in U.S. samples of middle-aged adults. Prior to age 40, about 5.5% of adults report hearing problems. This jumps to 19% among 40 to 69 year-olds (American Psychological Association, 2016). Middle-aged adults may experience more problems understanding speech when in noisy environments, in comparison to younger adults (Füllgrabe, Moore, & Stone, 2015; Neidleman, Wambacq, Besing, Spitzer, & Koehnke, 2015).

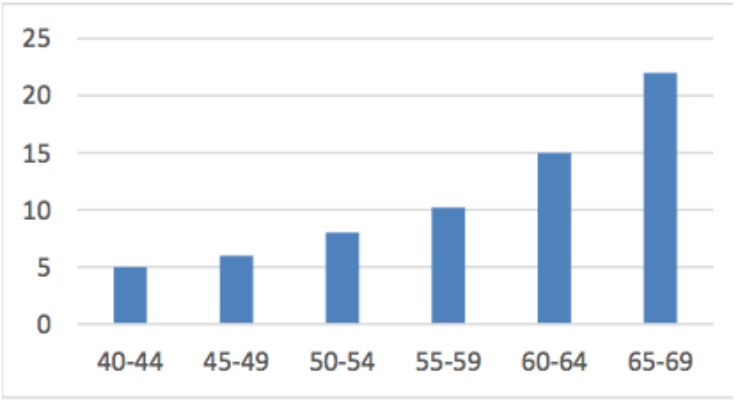


Figure 8.4: Incidence of Hearing Impairment in UK Adults. Adapted from Dawes, et al., (2014).

As we age we also lose the ability to hear higher frequencies (Humes, Kewley-Port, Fogerty, & Kinney, 2010). Hearing changes are more common among men than women, but males may underestimate their hearing problems (Uchida, Nakashima, Ando, Niino, & Shimokata, 2003). For many adults, hearing 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.

8.2: Health Concerns

Heart Disease: According to the most recent National Vital Statistics Reports (Xu, Murphy, Kochanek, & Bastian, 2016) heart disease continues to be the number one cause of death for Americans as it claimed 23.5% of those who died in 2013. 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.

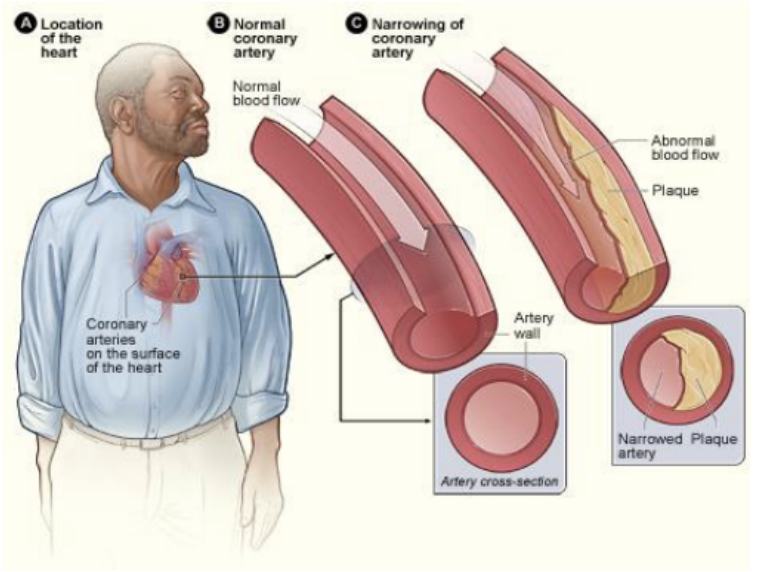


Figure 8.5: Atherosclerosis.

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 the 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.

Normal
Prehypertension (at risk)
Hypertension

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 2013 as it accounted for 22.5% of all deaths

(Xu et al., 2016). 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 8.6 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.

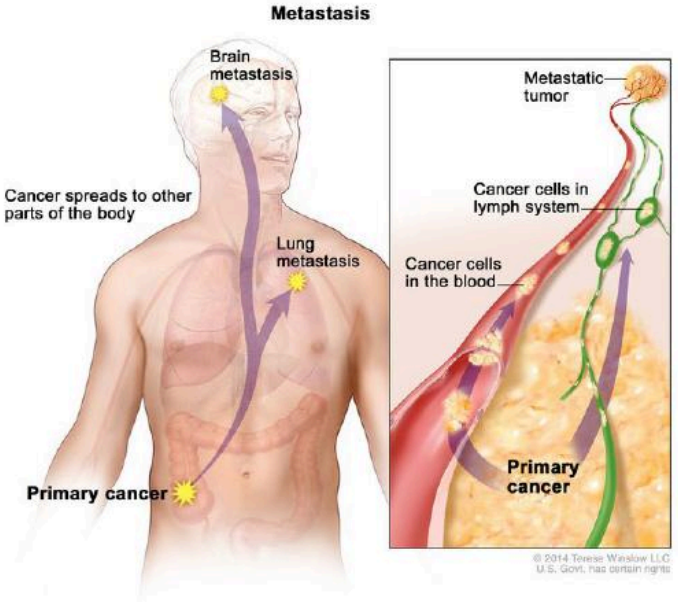


Figure 8.6: Metastasis.

There are more than 100 types of cancer. The American Cancer Society assemblies 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).

Tabl

Cancer Type	
Bladder	
Breast (Female – Male)	
Colon and rectal (combined)	
Endometrial	
Kidney (renal cell and renal pelvis) cancer	
Leukemia (all types)	
Lung (including bronchus)	
Melanoma	
Non-Hodgkin Lymphoma	
Pancreatic	
Prostate	
Thyroid	

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.

T
*Cholesterol levels are mea

Total Cholesterol
LDL
HDL
Triglycerides

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 8.7: Blood glucose test (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 8.4*: Estimated Number a**
Source: 2009-2012 National Health a

	Number with Diabetes
20 years or older	28.9
20-44	4.3
45-64	13.4
65 years or older	11.2
Men	15.5
Women	13.4

Table 8.4 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).

Tabl
Adapted

	Nor
Fasting Glucose	Below 10
A1C	Unde

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.

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).

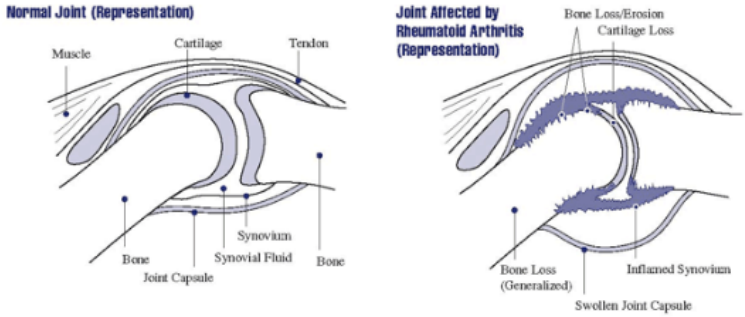


Figure 8.8: Normal joint versus joint affected by rheumatoid arthritis.

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

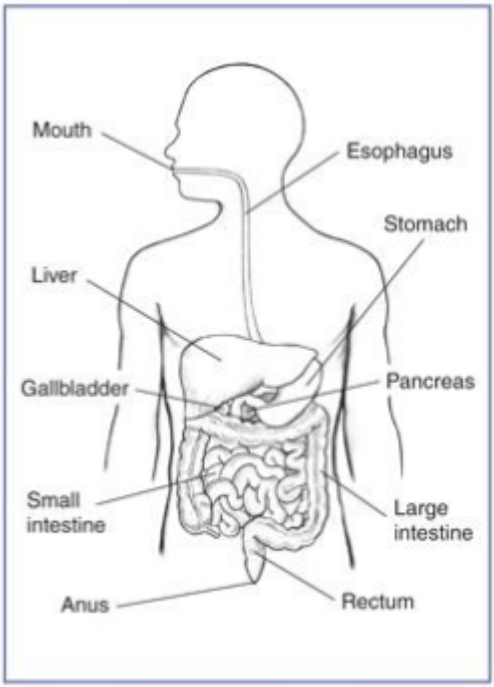


Figure 8.9: Digestive system.

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).

8.3: Sleep

According to the American Academy of Sleep Medicine (Kasper, 2015) adults require at least 7 hours of sleep per night to avoid the health risks associated with chronic sleep deprivation. Less than 6 hours and more than 10 hours is also not recommended for those in middle adulthood (National Sleep Foundation, 2015). Not surprisingly, many Americans do not receive the 7-9 hours of sleep recommended. Additional results included that in 1993, 67% of Americans felt they were getting enough sleep, but in 2013 only 56% felt they received as much sleep as needed. Additionally, 43% of Americans in 2013 believed they would feel better with more sleep. In 2013, only 59% of U.S. adults met that standard, while in 1942, 84% did (Jones, 2013). This means 41% of Americans receive less than the recommended amount of nightly sleep.

Sleep problems: According to the Sleep in America poll (National Sleep Foundation, 2015), 9% of Americans report being diagnosed with a sleep disorder, and of those 71% have sleep apnea and 24% suffer from insomnia. Pain is also a contributing factor in the difference between the amount of sleep Americans say they need and the amount they are getting. An average of 42 minutes of sleep debt occur for those with chronic pain, and 14 minutes for those who have suffered from acute pain in the past week. Stress and overall poor health are also key components of shorter sleep durations and worse sleep quality. Those in midlife with lower life satisfaction experienced greater delay in the onset of sleep than those with higher life satisfaction. Delayed onset of sleep could be the result of worry and anxiety during midlife, and improvements in those areas should improve sleep. Lastly, menopause can affect a woman's sleep duration and quality (National Sleep Foundation, 2016).

Children in the home and sleep: As expected, having children at home affects the amount of sleep one receives. According to a 2016

National Center for Health Statistics analysis (CDC, 2016) having children decreases the amount of sleep an individual receives, however, having a partner can improve the amount of sleep for both males and females. Table 8.6 illustrates the percentage of individuals not receiving seven hours of sleep per night based on parental role.

***Table 8.6*: Percentage of individu**

Demographic
Single Mothers
Mothers with Partner
Women without Children
Single Father
Fathers with Partner
Men without Children

Negative consequences of insufficient sleep: There are many consequences of too little sleep, and they include physical, cognitive, and emotional changes. Sleep deprivation suppresses immune responses that fight off infection, and can lead to obesity, memory impairment, and hypertension (Ferrie et al., 2007; Kushida, 2005). Insufficient sleep is linked to an increased risk for colon cancer, breast cancer, heart disease and type 2 diabetes (Pattison, 2015). A lack of sleep can increase stress as cortisol (a stress hormone) remains elevated which keeps the body in a state of alertness and hyperarousal which increases blood pressure. Sleep is also associated with longevity. Dew et al. (2003) found that older adults who had better sleep patterns also lived longer. During deep sleep a growth hormone is released which stimulates protein

synthesis, breaks down fat that supplies energy, and stimulates cell division. Consequently, a decrease in deep sleep contributes to less growth hormone being released and subsequent physical decline seen in aging (Pattison, 2015).



Figure 8.10: The importance of sleep.

Sleep disturbances can also impair glucose functioning in middle adulthood. Caucasian, African American, and Chinese non-shift-working women aged 48–58 years who were not taking insulin-related medications, participated in the Study of Women's Health across the Nation (SWAN) Sleep Study and were subsequently examined approximately 5 years later (Taylor et al., 2016). Body mass index (BMI) and insulin resistance were measured at two time points. Results indicated that irregular sleep schedules, including highly variable bedtimes and staying up much later than usual, are associated in midlife women with insulin resistance, which is an important indicator of metabolic health, including diabetes risk. Diabetes risk increases in midlife women, and irregular sleep schedules may be an important reason because irregular bedtime schedules expose the body to varying levels of light, which is the most important timing cue for the body's circadian clock. By disrupting circadian timing, bedtime variability may impair glucose metabolism and energy homeostasis.

8.4: Exercise, Nutrition, and Weight

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. 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. Learning relaxation techniques can also 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).

According to the Office of Disease Prevention and Health Promotion (2008), the following are exercise guidelines for adults:

- Adults should avoid being inactive. Any activity will result in some health benefits.
- For substantial health benefits, adults should engage in at least 150 minutes per week of moderate intensity exercise OR at least 75 minutes of vigorous intensity aerobic activity. Aerobic activity should occur for at least 10 minutes and preferably

spread throughout the week.
- For more extensive health benefits, adults can increase their aerobic activity to 300 minutes per week of moderate intensity OR 150 minutes per week of vigorous intensity aerobic activity.
- Adults should also participate in muscle-strengthening activities that are moderate or high intensity and involve all major muscle groups on two or more days per week.

Nutritional concerns: Aging brings about a reduction in the number of calories a person requires (see Table 8.7 for estimated caloric needs in middle-aged adults). 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. All adults need to be especially cognizant of the amount of sodium, sugar, and fat they are ingesting.

Table 8.7 Estimated Calorie Needs per Day, by Age, Sex, & Physical Activity Level

Source: Adapted from 2015-2020 Dietary Guidelines for Americans

[a]*Sedentary means a lifestyle that includes only the physical activity of independent living*

[b]*Moderate activity means a lifestyle that includes physical activity equivalent to walking more than 1.5 to 3 miles per day at 3 or 4 miles per hour, in addition to the activities of independent living.*

[c]*Active means a lifestyle that includes physical activity of walking more than 3 miles per day at 3 or 4 miles per hour, in addition to the activities of independent living.*

[d]*Estimates for females do not include women who are pregnant or breastfeeding*

Excess Sodium: According to dietary guidelines, adults should consume less than 2,300mg (1 teaspoon) per day of sodium. The American Heart Association (2016) reports that the average sodium intake among Americans is 3440mg per day. Processed foods are the main culprits of excess sodium. High sodium levels in the diet is correlated with increased blood pressure, and its reduction does show corresponding drops in blood pressure. Adults with high blood

pressure are strongly encouraged to reduce their sodium intake to 1500mg (U.S. Department of Health and Human Services & U.S. Department of Agriculture (USHHS & USDA), 2015).

Excess Fat: Dietary guidelines also suggests that adults should consume less than 10 percent of calories per day from saturated fats. The American Heart Association (2016) says optimally we should aim for a dietary pattern that achieves 5% to 6% of calories from saturated fat. In a 2000 calorie diet that is about 120 calories from saturated fat. In the average American diet about 34.3% of the diet comes from fat, with 15.0% from saturated fat (Berglund et al., 1999). Diets high in fat not only contribute to weight gain, but have been linked to heart disease, stroke, and high cholesterol.

Added Sugar: According to the recent Dietary Guidelines for Americans (USHHS & USDA, 2015) eating healthy means adults should consume less than 10 percent of calories per day from added sugars. Yet, currently about 15% of the calories in the American adult diet come from added sugars, or about 22 teaspoons of sugar per day (NIH, 2014c). Excess sugar not only contributes to weight gain, but diabetes and other health problems.

Metabolism and Weight Gain: One of the common complaints of midlife adults is weight gain, especially the accumulation of fat in the abdomen, which is often referred to as the middle-aged spread (Lachman, 2004). 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, their metabolism has slowed during midlife. ***Metabolism*** *is the process by which the body converts food and drink into energy.* The calories consumed are combined with oxygen to release the energy needed to function (Mayo Clinic, 2014b). People who have more muscle burn more calories, even at rest, and thus have a higher metabolism.

However, as you get older, the amount of muscle decreases. Consequently, fat accounts for more of one's weight in midlife and slows down the amount of calories burned. To compensate, midlife

adults have to increase their level of exercise, eat less, and watch their nutrition to maintain their earlier physique.



Figure 8.11: Exercise is Very Important in Middle Age.

Obesity: As discussed in the early adulthood chapter, obesity is a significant health concern for adults throughout the world, and especially America. Obesity rates continue to increase, and being overweight is associated with a myriad of health conditions including diabetes, high blood pressure, and heart disease. New research is now linking obesity to Alzheimer's disease. Chang et al. (2016) found that being overweight in midlife was associated with earlier onset of Alzheimer's disease. The study looked at 1,394 men and women who were part of the Baltimore Longitudinal Study of Aging. Their average age was around 60, and they were followed for 14 years. Results indicated that people with the highest body mass index, or BMI, at age 50 were more likely to develop Alzheimer's disease. In fact, each one-point increase in BMI was associated with getting Alzheimer's six to seven months earlier. Those with the highest BMIs also had more brain changes typical of Alzheimer's, even if they did not have symptoms of the disease. Scientists speculate that fat cells may produce harmful chemicals that

promote inflammation in blood vessels throughout the body, including in the brain. The conclusion of the study was that a healthy BMI at midlife may delay the onset of Alzheimer's disease.

Concluding Thoughts: Many of the changes that occur in midlife can be easily compensated for, such as buying glasses, exercising, and watching what one eats. However, the percentage of middle adults who have a significant health concern has increased in the past 15 years.

According to the 2016 United Health Foundation's America's Health Rankings Senior Report, the next generation of seniors will be less healthy than the current seniors (United Health Foundation, 2016). The study compared the health of middle-aged Americans (50-64 years of age) in 2014 to middle-aged Americans in 1999. Results indicated that in the past 15 years the prevalence of diabetes has increased by 55% and the prevalence of obesity has increased by 25%. At the state level, Massachusetts ranked first for healthy seniors, while Louisiana ranked last. Illinois ranked 36th, while Wisconsin scored higher at 13th.

What can we conclude from this information? Lifestyle has a strong impact on the health status of midlife adults, and 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, receive adequate sleep, and make use of social resources are most likely to enjoy a plateau of good health through these years (Lachman, 2004).

8.5: Climacteric

The **climacteric**, *or the midlife transition when fertility declines*, is biologically based but impacted by the environment. During midlife, men may experience a reduction in their ability to reproduce. Women, however, lose their ability to reproduce once they reach menopause.**Female Sexual and Reproductive Health**: **Perimenopause** *refers to a period of transition in which a woman's ovaries stop releasing eggs and the level of estrogen and progesterone production decreases.* **Menopause** *is defined as 12 months without menstruation.* The average age of menopause is approximately 51, however, many women begin experiencing symptoms in their 40s. These symptoms occur during perimenopause, which can occur 2 to 8 years before menopause (Huang, 2007). A woman may first begin to notice that her periods are more or less frequent than before. After a year without menstruation, a woman is considered menopausal and no longer capable of reproduction.

Symptoms: The symptoms that occur during perimenopause and menopause are typically caused by the decreased production of estrogen and progesterone (North American Menopause Society, 2016). The shifting hormones can contribute to the inability to fall asleep. Additionally, the declining levels of estrogen may make a woman more susceptible to environmental factors and stressors which disrupt sleep. A **hot flash** *is a surge of adrenaline* that can awaken the brain from sleep. It often produces sweat and a change of temperature that can be disruptive to sleep and comfort levels. Unfortunately, it may take time for adrenaline to recede and allow sleep to occur again (National Sleep Foundation, 2016).

The loss of estrogen also affects vaginal lubrication which diminishes and becomes waterier and can contribute to pain during intercourse. The vaginal wall also becomes thinner, and less elastic. Estrogen is also important for bone formation and growth, and decreased estrogen can cause osteoporosis resulting in decreased

bone mass. Depression, irritability, and weight gain are often associated with menopause, but they are not menopausal (Avis, Stellato & Crawford, 2001; Rossi, 2004). Weight gain can occur due to an increase in intra-abdominal fat followed by a loss of lean body mass after menopause (Morita et al., 2006). Consequently, women may need to change their lifestyle to counter any weight gain. Depression and mood swings are more common during menopause in women who have prior histories of these conditions rather than those who have not. Additionally, the incidence of depression and mood swings is not greater among menopausal women than non-menopausal women.

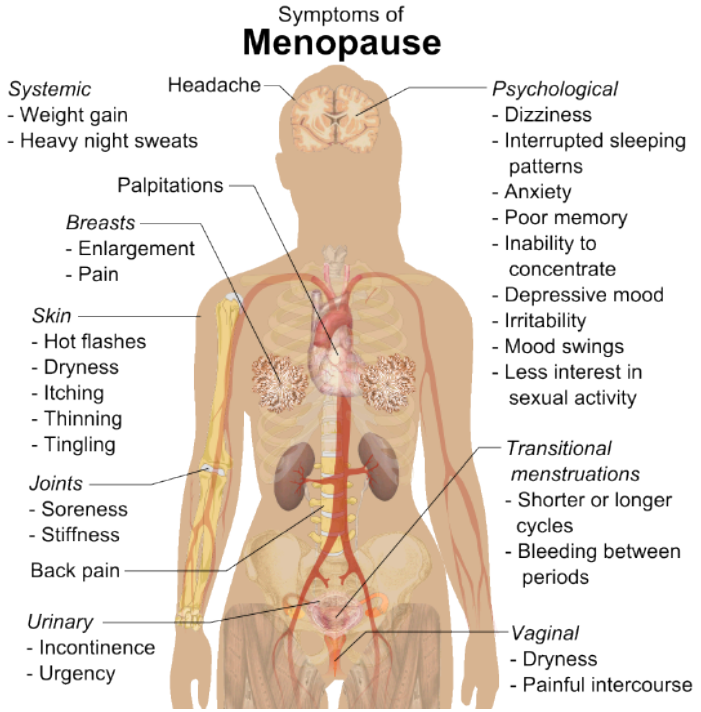


Figure 8.12: Symptoms of menopause.

Figure 8.12 identifies symptoms experienced by women during menopause, however, women vary greatly in the extent to which these symptoms are experienced. Most American women go

through menopause with few problems (Carroll, 2016). Overall, menopause is not seen as universally distressing (Lachman, 2004).

Hormone Replacement Therapy: 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. However, more recently, hormone replacement therapy has been associated with breast cancer, stroke, and the development of blood clots (NIH,
2007). Most women do not have symptoms severe enough to warrant estrogen or hormone replacement therapy. 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.

Menopause and Ethnicity: In a review of studies that mentioned menopause, symptoms varied greatly across countries, geographic regions, and even across ethnic groups within the same region (Palacios, Henderson, & Siseles, 2010). For example, the Study of Women's Health across the Nation (SWAN) examined 14,906 white, African American, Hispanic, Japanese American, and Chinese American women's menopausal experiences (Avis et al., 2001). After controlling for age, educational level, general health status, and economic stressors, white women were more likely to disclose symptoms of depression, irritability, forgetfulness, and headaches compared to women in the other racial/ethnic groups. African American women experienced more night sweats, but this varied across research sites. Finally, Chinese American and Japanese American reported fewer menopausal symptoms when compared to the women in the other groups. Overall, the Chinese and Japanese group reported the fewest symptoms, while white women reported more psychosomatic symptoms and African American women reported more vasomotor symptoms.



Figure 8.13: Symptoms of menopause vary greatly.

Cultural Differences: Cultural influences seem to also play a role in the way menopause is experienced. Further, the prevalence of language specific to menopause is an important indicator of the occurrence of menopausal symptoms in a culture. Hmong tribal women living in Australia and Mayan women report that there is no word for "hot flashes" and both groups did not experience these symptoms (Yick-Flanagan, 2013). When asked about physical changes during menopause, the Hmong women reported lighter or no periods. They also reported no emotional symptoms and found the concept of emotional difficulties caused by menopause amusing (Thurston & Vissandjee, 2005). Similarly, a study with First Nation women in Canada found there was no single word for "menopause" in the Oji-Cree or Ojibway languages, with women referring to menopause only as "that time when periods stop" (Madden, St Pierre-Hansen & Kelly, 2010).

While some women focus on menopause as a loss of youth, womanhood, and physical attractiveness, career-oriented women

tend to think of menopause as a liberating experience. Japanese women perceive menopause as a transition from motherhood to a more whole person, and they no longer feel obligated to fulfill certain expected social roles, such as the duty to be a mother (Kagawa-Singer, Wu, & Kawanishi, 2002). In India, 94% of women said they welcomed menopause. Aging women gain status and prestige and no longer have to go through self-imposed menstrual restrictions, which may contribute to Indian women's experiences (Kaur, Walia, & Singh, 2004). Overall, menopause signifies many different things to women around the world and there is no typical experience. Further, normalizing rather than pathologizing menopause is supported by research and women's experiences.

Male Sexual and Reproductive Health: Although males can continue to father children throughout middle adulthood, erectile dysfunction (ED) becomes more common. Erectile dysfunction refers to the inability to achieve an erection or an inconsistent ability to achieve an erection (Swierzewski, 2015). Intermittent ED affects as many as 50% of men between the ages of 40 and 70. About 30 million men in the United States experience chronic ED, and the percentages increase with age. Approximately 4% of men in their 40s, 17% of men in their 60s, and 47% of men older than 75 experience chronic ED.

Causes for ED are primarily due to medical conditions, including diabetes, kidney disease, alcoholism, and atherosclerosis (build-up of plaque in the arteries). Plaque is made up of fat, cholesterol, calcium and other substances found in the blood. Over time plaque builds up, hardens, and restricts the blood flow in the arteries (NIH, 2014d). This build-up limits the flow of oxygenated blood to organs and the penis. Overall, diseases account for 70% of chronic ED, while psychological factors, such as stress, depression and anxiety account for 10%-20% of all cases. Many of these causes are treatable, and ED is not an inevitable result of aging.



Figure 8.14: Medical Check-ups are Important for Men.

Men during middle adulthood may also experience prostate enlargement, which can interfere with urination, and deficient testosterone levels which decline throughout adulthood, but especially after age 50. If testosterone levels decline significantly, it is referred to as andropause or late-onset hypogonadism. Identifying whether testosterone levels are low is difficult because individual blood levels vary greatly. Low testosterone is not a concern unless it accompanied by negative symptoms such as low sex drive, ED, fatigue, loss of muscle, loss of body hair, or breast enlargement. Low testosterone is also associated with medical conditions, such as diabetes, obesity, high blood pressure, and testicular cancer. The effectiveness of supplemental testosterone is mixed, and long term testosterone replacement therapy for men can increase the risk of prostate cancer, blood clots, heart attack and stroke (WebMD, 2016). Most men with low testosterone do not have related problems (Berkeley Wellness, 2011).

The Climacteric and Sexuality

Sexuality is an important part of people's lives at any age, and many older adults are very interested in staying sexually active (Dimah & Dimah, 2004). According to the National Survey of Sexual Health and Behavior (NSSHB) (Center for Sexual Health Promotion, 2010), 74% of males and 70% of females aged 40-49 engaged in vaginal

intercourse during the previous year, while 58% of males and 51% of females aged 50-59 did so.



Figure 8.15: Sexuality in older adults.

Despite these percentages indicating that middle adults are sexually active, age-related physical changes can affect sexual functioning. For women, decreased sexual desire and pain during vaginal intercourse because of menopausal changes have been identified (Schick et al., 2010). A woman may also notice less vaginal lubrication during arousal which can affect overall pleasure (Carroll, 2016). Men may require more direct stimulation for an erection and the erection may be delayed or less firm (Carroll, 2016). As previously discussed men may experience erectile dysfunction or experience a medical conditions (such as diabetes or heart disease) that impact sexual functioning. Couples can 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. In 2014, 16.7% of the country's new HIV diagnoses (7,391 of 44,071) were among people 50 and older, according to the Centers for Disease Control and Prevention (2014e). This was an increase from 15.4% in 2005. Practicing safe sex is important at any age, but unfortunately adults over the age of 40 have the lowest rates of condom use (Center for Sexual Health Promotion, 2010). This low rate of condom use suggests the need to enhance education efforts for older individuals regarding STI risks and prevention. 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.

8.6: 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, 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 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.

Learning Objectives: Cognitive Development in Middle Adulthood

- Describe crystalized versus fluid intelligence
- Describe research from the Seattle Longitudinal Study
- Explain the importance of flow to creativity and life satisfaction
- Describe how middle adults are turning to college for advanced training
- Describe the difference between an expert and a novice
- Describe the changes in the U.S. work force, especially among middle adults
- Explain the importance of leisure to mental health and a successful retirement

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, 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).

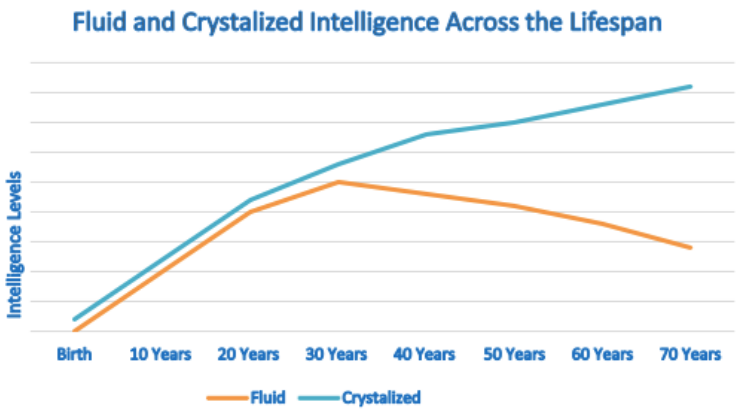


Figure 8.16: Adapted from Horn, Donaldson and Engstrom (1981).

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 6000 people have participated thus far, and 26 people from the original group are still in the study today. 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 ones '70s (Schaie, 2005; Willis

& Schaie, 1999). However, numerical computation and perceptual speed decline in middle and late adulthood (see Figure 8.17).

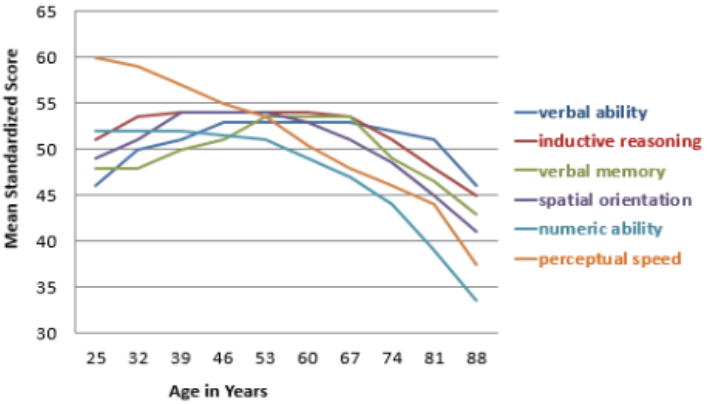


Figure 8.17: Seattle Longitudinal Study ages 25 to 88.

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.

Flow *is the mental state of being completely present and fully absorbed in a task* (Csikszentmihalyi, 1990). When in a state of flow, the individual is able to block outside distractions and the mind is fully open to producing. Additionally, the person is achieving great joy or intellectual satisfaction from the activity and accomplishing a goal. Further, when in a state of flow, the individual is not concerned with extrinsic rewards. Csikszentmihalyi (1996) used his theory of flow to research how some people exhibit high levels of creativity as he believed that a state of flow is an important factor to creativity (Kaufman & Gregoire, 2016). Other characteristics of creative people identified by Csikszentmihalyi (1996) include curiosity and drive, a

value for intellectual endeavors, and an ability to lose our sense of self and feel a part of something greater. In addition, he believed that the tortured creative person was a myth and that creative people were very happy with their lives. According to Nakamura and Csikszentmihalyi (2002) people describe flow as the height of enjoyment. The more they experience it, the more they judge their lives to be gratifying. The qualities that allow for flow are well-developed in middle adulthood.

Tacit knowledge *is knowledge that is pragmatic or practical and learned through experience rather than explicitly taught*, and it also increases with age (Hedlund, Antonakis, & Sternberg, 2002). Tacit knowledge might be thought of as "know-how" or "professional instinct." It is referred to as tacit because it cannot be codified or written down. It does not involve academic knowledge, rather it involves being able to use skills and to problem-solve in practical ways. Tacit knowledge can be understood in the workplace and used by blue collar workers, such as carpenters, chefs, and hair dressers.

8.7: 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, accounted for 17% of all college and graduate students in 2009, and are expected to comprise 19% of that total 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).



Figure 8.18: Middle adults in college.

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). 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 college 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 or continue to work in retirement, including in a new field.

8.8: Gaining Expertise - The Novice and the Expert

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 making bread, quilting, computer programming, 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 experience. 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 her own procedure.
- **Automatic:** Complex thoughts and actions become more routine for experts. Their reactions appear instinctive over time, and this is because expertise allows us to process information faster and more effectively (Crawford & Channon, 2002).
- **Strategic:** Experts have more effective strategies than non-experts. For instance, while both skilled and novice doctors generate several hypotheses within minutes of an encounter with a patient, the more skilled clinicians' conclusions are likely to be more accurate. In other words, they generate better hypotheses than the novice. This is because they are able to discount misleading symptoms and other distractors and hone in on the most likely problem the patient is experiencing (Norman, 2005). Consider how your note taking skills may have changed after being in school over a number of

years. Chances are you do not write down everything the instructor says, but the more central ideas. You may have even come up with your own short forms for commonly mentioned words in a course, allowing you to take down notes faster and more efficiently than someone who may be a novice academic note taker.

- **Flexible:** Experts in all fields are more curious and creative; they enjoy a challenge and experiment with new ideas or procedures. The only way for experts to grow in their knowledge is to take on more challenging, rather than routine tasks.

Expertise takes time. It is a long-process resulting from experience and practice (Ericsson, Feltovich, & Prietula, 2006). 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.

However, expertise cannot fully make-up for all 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.

8.9: Work and Leisure at Midlife

Work

Who is the U.S. workforce? The civilian, non-institutionalized workforce; that is the population of those aged 16 and older, who are employed has steadily declined since it reached its peak in the late 1990s, when 67% of the civilian workforce population was employed. In 2012 the rate had dropped to 64% and by 2022 it is projected to decline to 62%. The U.S. population is expected to grow more slowly based on census projections for the next few years. Those new entrants to the labor force, adults age 16 to 24, are the only population of adults that will shrink in size over the next few years by nearly half a percent, while those age 55 and up will grow by 2.3% over current rates, and those age 65 to 74 will grow by nearly 4% (Monthly Labor Review (MLR), 2013). In 1992, 26% of the population was 55+, by 2022 it is projected to be 38%. Table 8.8 shows the rates of employment by age. In 2002, baby boomers were between the ages of 38 to 56, the prime employment group. In 2012, the youngest baby boomers were 48 and the oldest had just retired (age 66). These changes might explain some of the steady decline in work participation as this large population cohort ages out of the workforce.

In 2012, 53% of the workforce was male. For both genders and for most age groups the rate of participation in the labor force has declined from 2002 to 2012, and it is projected to decline further by 2022. The exception is among the older middle-age groups (the baby boomers), and especially for women 55 and older.

***Table 8.8*: Percentage of th**
**Projected rate*

	2002	
16-19	47.5	
20-24	80.7	
25-34	92.4	
35-44	92.1	
45-54	88.5	
55-59	78	
60-64	57.6	
16+ totals	74.1	

Hispanic males have the highest rate of participation in the labor force. In 2012, 76% of Hispanic males, compared with 71% of White, 72% of Asian, and 64% of Black men ages 16 or older were employed. Among women, Black women were more likely to be participating in the workforce (58%) compared with almost 57% of Hispanic and Asian, and 55% of White females. The rates for all racial and ethnic groups are expected to decline by 2022 (MLR, 2013).

Climate in the Workplace for Middle-aged Adults: A number of studies have found that job satisfaction tends to peak in middle adulthood (Besen, Matz-Costa, Brown, Smyer, & Pitt- Catsouphers, 2013; Easterlin, 2006). This satisfaction stems from not only higher wages, but often greater involvement in decisions that affect the workplace as they move from worker to supervisor or manager. Job satisfaction is also influenced by being able to do the job well, and

after years of experience at a job many people are more effective and productive. Another reason for this peak in job satisfaction is that at midlife many adults lower their expectations and goals (Tangri, Thomas, & Mednick, 2003). Middle-aged employees may realize they have reached the highest they are likely to in their career. This satisfaction at work translates into lower absenteeism, greater productivity, and less job hopping in comparison to younger adults (Easterlin, 2006).

However, not all middle-aged adults are happy in the work place. Women may find themselves up against the **glass ceiling**, *organizational discrimination in the workplace that limits the career advancement of women*. This may explain why females employed at large corporations are twice as likely to quit their jobs as are men (Barreto, Ryan, & Schmitt, 2009). Another problem older workers may encounter is job **burnout**, *becoming disillusioned and frustrated at work*. American workers may experience more burnout than do workers in many other developed nations, because most developed nations guarantee by law a set number of paid vacation days (International Labour Organization, ILO, 2011), the United States does not (U.S. Department of Labor, 2016).

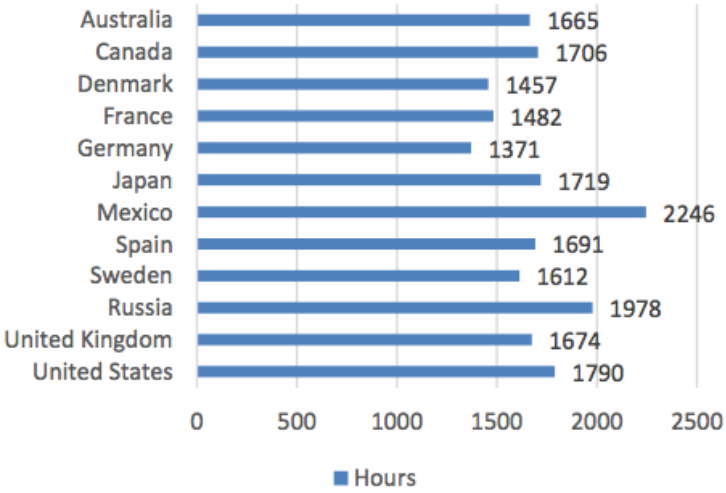


Figure 8.19: Average Annual Hours Actually Worked per Worker.

Not all employees are covered under overtime pay laws (U.S. Department of Labor, 2016). This is important when you considered that the 40-hour work week is a myth for most Americans. Only 4 in 10 U.S. workers work the typical 40-hour work week. The average work week for many is almost a full day longer (47 hours), with 39% working 50 or more hours per week (Saad, 2014). In comparison to workers in many other developed nations, American workers work more hours per year (Organisation for Economic Cooperation and Development, OECD, 2016). As can be seen in Figure 8.19, Americans work more hours than most European nations, especially western and northern Europe, although they work less hours than workers in other nations, especially Mexico.

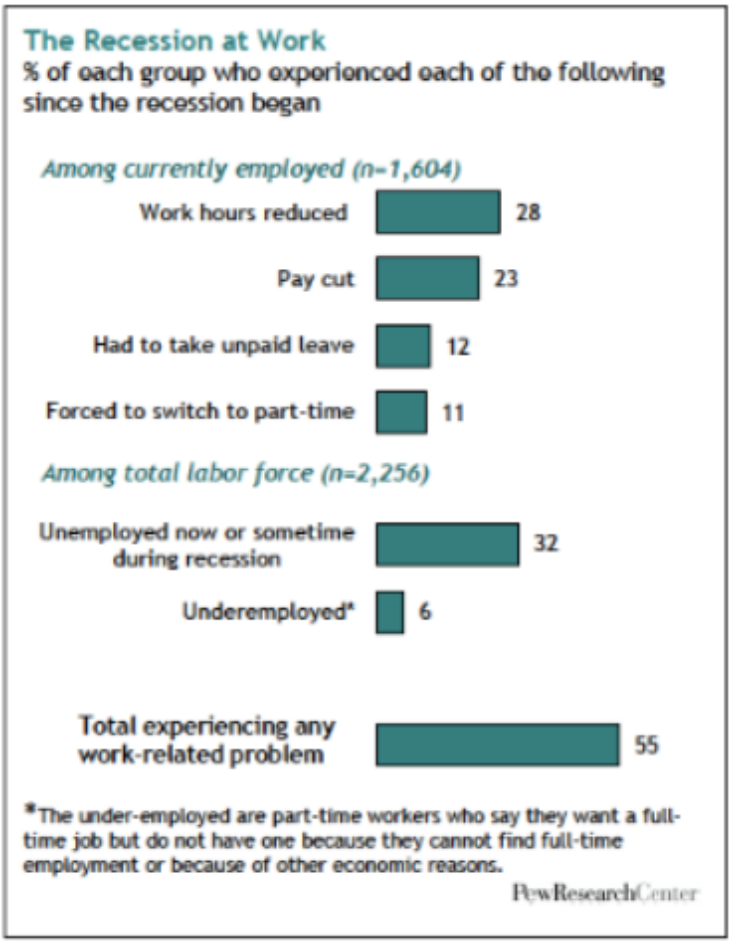


Figure 8.20: The Recession at Work.

Challenges in the Workplace for Middle-aged Adults: In recent years middle aged adults have been challenged by economic downturns, starting in 2001, and again in 2008. Fifty-five percent of adults reported some problems in the workplace, such as fewer hours, pay-cuts, having to switch to part-time, etc., during the most recent economic recession (see Figure 8.20, Pew Research Center, 2010a). While young adults took the biggest hit in terms of

levels of unemployment, middle-aged adults also saw their overall financial resources suffer as their retirement nest eggs disappeared and house values shrank, while foreclosures increased (Pew Research Center, 2010b). Not surprisingly this age group reported that the recession hit them worse than did other age groups, especially those age 50-64. Middle aged adults who find themselves unemployed are likely to remain unemployed longer than those in early adulthood (U.S. Government Accountability Office, 2012). In the eyes of employers, it may be more cost effective to hire a young adult, despite their limited experience, as they would be starting out at lower levels of the pay scale. In addition, hiring someone who is 25 and has many years of work ahead of them versus someone who is 55 and will likely retire in 10 years may also be part of the decision to hire a younger worker (Lachman, 2004). American workers are also competing with global markets and changes in technology. Those who are able to keep up with all these changes, or are willing to uproot and move around the country or even the world have a better chance of finding work. The decision to move may be easier for people who are younger and have fewer obligations to others.

Leisure

As most developed nations restrict the number of hours an employer can demand that an employee work per week, and require employers to offer vacation time, what do middle aged adults do with their *time off from work and duties*, referred to as **leisure**? Around the world the most common leisure activity in both early and middle adulthood is watching television (Marketing Charts Staff, 2014). On average, middle aged adults spend 2-3 hours per day watching TV (Gripsrud, 2007) and watching TV accounts for more than half of all the leisure time (see Figure 8.21).

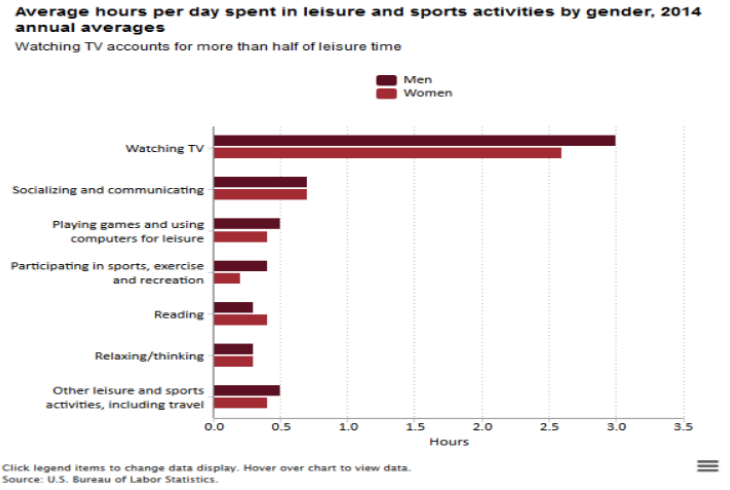


Figure 8.21: Average hours per days spent in leisure and sports activities by gender in 2014.

In the United States, men spend about 5 hours more per week in leisure activities, especially on weekends, than do women (Drake, 2013; U.S. Bureau of Labor Statistics, 2016). The leisure gap between mothers and fathers is slightly smaller, about 3 hours a week, than among those without children under age 18 (Drake, 2013). Those age 35-44 spend less time on leisure activities than any other age group, 15 or older (U.S. Bureau of Labor Statistics, 2016). This is not surprising as this age group are more likely to be parents and still working up the ladder of their career, so they may feel they have less time for leisure.

Americans have less leisure time than people in many other developed nations. As you read earlier, there are no laws in many job sectors guaranteeing paid vacation time in the United States (see Figure 8.22). Ray, Sanes and Schmitt (2013) report that several other nations also provide additional time off for young and older workers and for shift workers. In the United States, those in higher paying jobs and jobs covered by a union contract are more likely to have paid vacation time and holidays (Ray & Schmitt, 2007).

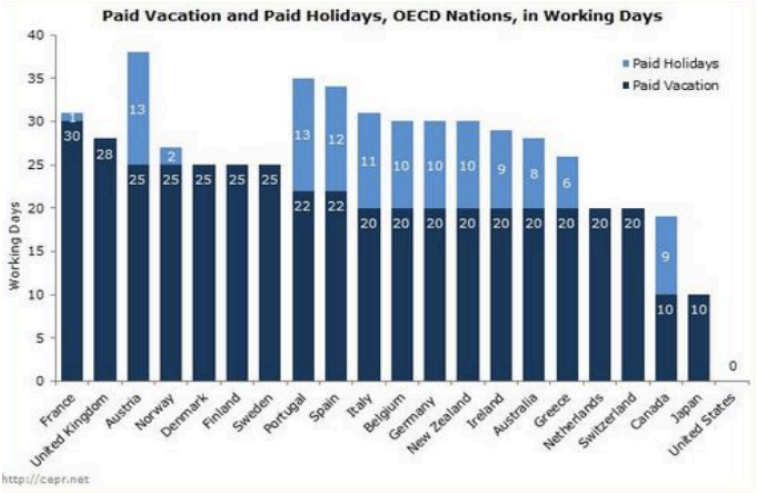


Figure 8.22: Legally Mandated Time Off.

But do U.S. workers take their time off? According to Project Time-Off (2016), 55% of U.S. workers in 2015 did not take all of their paid vacation and holiday leave. A large percentage of this leave is lost. It cannot be rolled-over into the next year or paid out. A total of 658 million vacation days, or an average of 2 vacation days per worker was lost in 2015. The reasons most often given for not taking time off was worry that there would be a mountain of work to return to (40%), concern that no one else could do the job (35%), not being able to afford a vacation (33%), feeling it was harder to take time away when you have or are moving up in the company (33%), and not wanting to seem replaceable (22%). Since 2000, more American workers are willing to work for free rather than take the time that is allowed to them. A lack of support from their boss and even their colleagues to take a vacation is often a driving force in deciding to forgo time off. In fact, 80% of the respondents to the survey above said they would take time away if they felt they had support from their boss. Two-thirds reported that they hear nothing, mixed messages, or discouraging remarks about taking their time off. Almost a third (31%) feel they should contact their workplace, even while on vacation.

The benefits of taking time away from work: Several studies have noted the benefits of taking time away from work. It reduces job stress burnout (Nimrod, Kleiber, & Berdychevesky, 2012), improves both mental health (Qian, Yarnal, & Almeida, 2013) and physical health (Stern & Konno, 2009), especially if that leisure time also includes moderate physical activity (Lee et al., 2015). Leisure activities can also improve productivity and job satisfaction (Kühnel & Sonnentag, 2011) and help adults deal with balancing family and work obligations (Lee, et al., 2015).

8.10: Psychosocial Development in Middle Adulthood

Learning Objectives: Psychosocial Development in Middle Adulthood

- Explain the controversy surrounding the concept of a midlife crisis
- Explain the sources of stress confronting adults in midlife and the strategies to cope
- Summarize Erikson's seventh psychosocial task of generativity vs stagnation
- Describe the relationships middle-aged adults have with their children, parents, and other family members
- Describe singlehood, marriage, divorce, and remarriage at midlife
- Describe the contemporary roles of grandparents
- Describe friendships at midlife
- Explain how women are uniquely affected at midlife
- Explain the role of religion at midlife

There are many socioemotional changes that occur in how middle-aged adults perceive themselves. While people in their early 20s may emphasize how old they are to gain respect or to be viewed as experienced, by the time people reach their 40s they tend to emphasize how young they are. For instance, few 40 year olds cut each other down for being so young stating: "You're only 43? I'm 48!" A previous focus on the future gives way to an emphasis on the present. Neugarten (1968) notes that in midlife, people no longer think of their lives in terms of how long they have lived. Rather, life is thought of in terms of how many years are left.

Midlife Crisis?

In 1978 Daniel Levinson published a book entitled *The Seasons of a Man's Life* in which he presented a theory of development in adulthood. Levinson's work was based on in-depth interviews with 40 men between the ages of 35-45. Levinson (1978) indicated that adults go through stages and have an image of the future that motivates them. This image is called "the dream" and for the men interviewed, it was a dream of how their career paths would progress and where they would be at midlife. According to Levinson the midlife transition (40-45) was a time of reevaluating previous commitments; making dramatic changes if necessary; giving expression to previously ignored talents or aspirations; and feeling more of a sense of urgency about life and its meaning. By the time the men entered middle adulthood (45-50), they believed they committed to the new choices made and placed one's energies into these commitments.

Levinson believed that a midlife crisis was a normal part of development as the person is more aware of how much time has gone by and how much time is left. The future focus of early adulthood gives way to an emphasis on the present in midlife, and the men interviewed had difficulty reconciling the "dream" they held about the future with the reality they experienced. Consequently, they felt impatient and were no longer willing to postpone the things they had always wanted to do. Although Levinson believed his research demonstrated the existence of a midlife crisis, his study has been criticized for his research methods, including small sample size, similar ages, and concerns about a cohort effect. In fact, other research does not support his theory of the midlife crisis.

Vaillant (2012) believed that it was the cross-sectional design of Levinson's study that led to the erroneous conclusion of an inevitable midlife crisis. Instead, he believed that longitudinal studies of an individual's entire life was needed to determine the

factors associated with optimum health and potential. Vaillant was one of the main researchers in the 75 year-old Harvard Study of Adult Development, and he considered a midlife crisis to be a rare occurrence among the participants (Vaillant, 1977). Additional findings of this longitudinal study will be discussed in the next chapter on late adulthood.

Most research suggests that most people in the United States today do not experience a midlife crisis. Results of a 10-year study conducted by the MacArthur Foundation Research Network on Successful Midlife Development, based on telephone 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% of their participants reported experiencing a midlife crisis. The crisis tended to occur among the highly educated and was triggered by a major life event rather than out of a fear of aging (Research Network on Successful Midlife Development, 2007).

8.11: Stress

We all know that stress plays a major role in our mental and physical health, but what exactly is stress? The term **stress** *is defined as pattern of physical and psychological responses in an organism after it perceives a a threatening event that disturbs its homeostasis and taxes its abilities to cope with the event* (Hooker & Pressman, 2016). Stress was originally derived from the field of mechanics where it is used to describe materials under pressure. The word was first used in a *psychological* manner by researcher Hans Selye, who was examining the effect of an ovarian hormone that he thought caused sickness in a sample of rats. Surprisingly, he noticed that almost any injected hormone produced this same sickness. He smartly realized that it was not the hormone under investigation that was causing these problems, but instead the aversive experience of being handled and injected by researchers led to high physiological arousal, and eventually to health problems like ulcers.

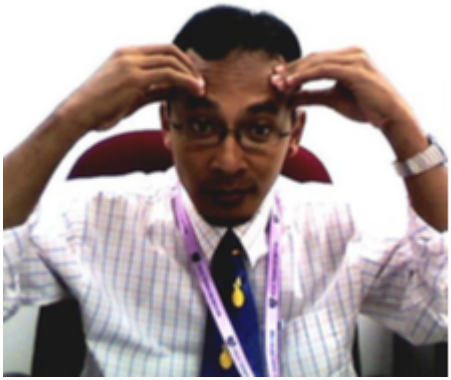


Figure 8.23: Are you Stressed?

Selye (1946) coined the term **stressor** *to label a stimulus that had this effect on the body (that is, causing stress).* He developed a model of the stress response called the **General Adaptation Syndrome**,

which is a three-phase model of stress, which includes a mobilization of physiological resources phase, a coping phase, and an exhaustion phase (i.e., when an organism fails to cope with the stress adequately and depletes its resources). Figure 8.24 illustrates the General Adaptation Syndrome.

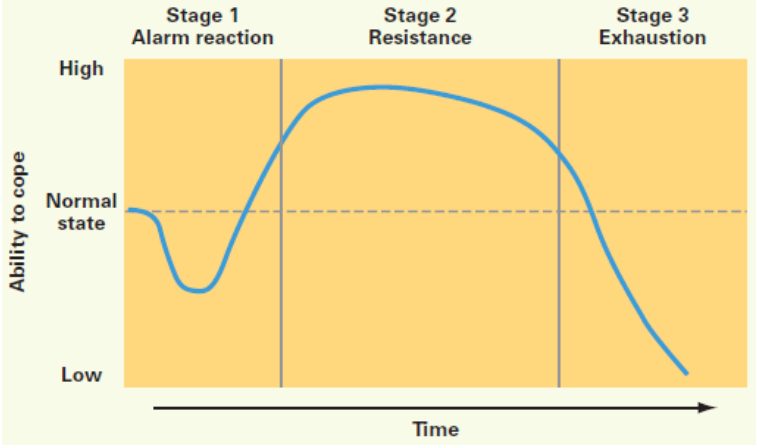


Figure 8.24: General Adaptation Syndrome.

Psychologists have studied stress in a myriad of ways, and it is not just major life stressor (e.g., a family death, a natural disaster) that increase the likelihood of getting sick. Stress can result from negative events, chronically difficult situations, a biological fight-or-flight response, and as clinical illness, such as post-traumatic stress disorder (PTSD). Even small daily hassles, like getting stuck in traffic or fighting with your friend, can raise your blood pressure, alter your stress hormones, and even suppress your immune system function (DeLongis, Folkman, & Lazarus, 1988; Twisk, Snel, Kemper, & van Machelen, 1999). Stress continues to be one of the most important and well-studied psychological correlates of illness, because excessive stress causes potentially damaging wear and tear on the body and can influence almost any disease process.

Dispositions and Stress: Negative dispositions and personality traits have been strongly tied to an array of health risks. One of

the earliest negative trait-to-health connections was discovered in the 1950s by two cardiologists. They made the interesting discovery that there were common behavioral and psychological patterns among their heart patients that were not present in other patient samples. *This pattern included being competitive, impatient, hostile, and time urgent.* They labeled it **Type A Behavior**. Importantly, it was found to be associated with *double* the risk of heart disease as compared with **Type B Behavior** (*absence of Type A behaviors*) (Friedman & Rosenman, 1959). Since the 1950s, researchers have discovered that it is the hostility and competitiveness components of Type A that are especially harmful to heart health (Iribarren et al., 2000; Matthews, Glass, Rosenman, & Bortner, 1977; Miller, Smith, Turner, Guijarro, & Hallet, 1996). Hostile individuals are quick to get upset, and this angry arousal can damage the arteries of the heart. In addition, given their negative personality style, hostile people often lack a heath-protective supportive social network.



Figure 8.25: Social Support is important for handling stress.

Social Relationships and Stress: Research has shown that the impact of social isolation on our risk for disease and death is similar in magnitude to the risk associated with smoking regularly (Holt-Lunstad, Smith, & Layton, 2010; House, Landis, & Umberson, 1988). In fact, the importance of social relationships for our health is so significant that some scientists believe our body has developed a physiological system that encourages us to seek out our relationships, especially in times of stress (Taylor et al., 2000). **Social integration** *is the concept used to describe the number of social roles that you have* (Cohen & Willis, 1985). For example, you might be a daughter, a basketball team member, a Humane Society volunteer, a coworker, and a student. Maintaining these different roles can improve your health via encouragement from those around you to maintain a healthy lifestyle. Those in your social network might also provide you with social support (e.g., when you are under stress). This support might include emotional help (e.g., a hug when you need it), tangible help (e.g., lending you money), or advice. By helping to improve health behaviors and reduce stress, social relationships can have a powerful, protective impact on health, and in some cases, might even help people with serious illnesses stay alive longer (Spiegel, Kraemer, Bloom, & Gottheil, 1989).

Caregiving and Stress: A disabled child, spouse, parent, or other family member is part of the lives of some midlife adults. According to the National Alliance for Caregiving (2015), 40 million Americans provide unpaid caregiving. The typical caregiver is a 49 year-old female currently caring for a 69 year-old female who needs care because of a long-term physical condition. Looking more closely at the age of the recipient of caregiving, the typical caregiver for those 18-49 years of age is a female (61%) caring mostly for her own child (32%) followed by a spouse or partner (17%). When looking at older recipients (50+) who receive care, the typical caregiver is female (60%) caring for a parent (47%) or spouse (10%).

Caregiving places enormous stress on the caregiver. Caregiving for a young or adult child with special needs was associated with poorer global health and more physical symptoms among both

fathers and mothers (Seltzer, Floyd, Song, Greenberg, & Hong, 2011). Marital relationships are also a factor in how the caring affects stress and chronic conditions. Fathers who were caregivers identified more chronic health conditions than non-caregiving fathers, regardless of marital quality. In contrast, caregiving mothers reported higher levels of chronic conditions when they reported a high level of marital strain (Kang & Marks, 2014). Age can also make a difference in how one is affected by the stress of caring for a child with special needs. Using data from the Study of Midlife in the Unites States, Ha, Hong, Seltzer and Greenberg (2008) found that older parents were significantly less likely to experience the negative effects of having a disabled child than younger parents. They concluded that an age-related weakening of the stress occurred over time. This follows with the greater emotional stability noted at midlife.

Currently 25% of adult children, mainly baby boomers, provide personal or financial care to a parent (Metlife, 2011). Daughters are more likely to provide basic care and sons are more likely to provide financial assistance. Adult children 50+ who work and provide care to a parent are more likely to have fair or poor health when compared to those who do not provide care. Some adult children choose to leave the work force, however, the cost of leaving the work force early to care for a parent is high. For females, lost wages and social security benefits equals $324,044, while for men it equals $283,716 (Metlife, 2011). This loss can jeopardize the adult child's financial future. Consequently, there is a need for greater workplace flexibility for working caregivers.

Spousal Care: Certainly caring for a disabled spouse would be a difficult experience that could negatively affect one's health. However, research indicates that there can be positive health effect for caring for a disabled spouse. Beach, Schulz, Yee and Jackson (2000) evaluated health related outcomes in four groups: Spouses with no caregiving needed (Group 1), living with a disabled spouse but not providing care (Group 2), living with a disabled spouse and providing care (Group 3), and helping a disabled spouse while

reporting caregiver strain, including elevated levels of emotional and physical stress (Group 4). Not surprisingly, the participants in Group 4 were the least healthy and identified poorer perceived health, an increase in health-risk behaviors, and an increase in anxiety and depression symptoms. However, those in Group 3 who provided care for a spouse, but did not identify caregiver strain, actually identified decreased levels of anxiety and depression compared to Group 2 and were actually similar to those in Group 1. It appears that greater caregiving involvement was related to better mental health as long as the caregiving spouse did not feel strain. The beneficial effects of helping identified by the participants were consistent with previous research (Krause, Herzog, & Baker, 1992; Schulz et al., 1997).



Figure 8.26: Caregiving for females is associated with greater stress.

When caring for a disabled spouse, gender differences have also been identified. Female caregivers of a spouse with dementia experienced more burden, had poorer mental and physical health, exhibited increased
depressive symptomatology, took part in fewer health-promoting activities, and received fewer hours of help than male caregivers (Gibbons et al., 2014). This recent study was consistent with previous research findings that women experience more caregiving burden than men, despite similar caregiving situations (Torti, Gwyther, Reed, Friedman, & Schulman, 2004; Yeager, Hyer, Hobbs, & Coyne, 2010). Explanations for why women do not use more external

support, which may alleviate some of the burden, include women's expectations that they should assume caregiving roles (Torti et al, 2004) and their concerns with the opinions of others (Arai, Sugiura, Miura, Washio, & Kudo, 2000). Also contributing to women's poorer caregiving outcomes is that disabled males are more aggressive than females, especially males with dementia who display more physical and sexual aggression toward their caregivers (Eastley & Wilcock, 1997; Zuidema, de Jonghe, Verhey, & Koopmans, 2009). Female caregivers are certainly at risk for negative consequences of caregiving, and greater support needs to be available to them.

Stress Management: About 20% of Americans report having stress, with 18–33 year-olds reporting the highest levels (American Psychological Association, 2012). Given that the sources of our stress are often difficult to change (e.g., personal finances, current job), a number of interventions have been designed to help reduce the aversive responses to duress, especially related to health. For example, relaxation activities and forms of meditation are techniques that allow individuals to reduce their stress via breathing exercises, muscle relaxation, and mental imagery. Physiological arousal from stress can also be reduced via **biofeedback,** *a technique where the individual is shown bodily information that is not normally available to them (e.g., heart rate), and then taught strategies to alter this signal.* This type of intervention has even shown promise in reducing heart and hypertension risk, as well as other serious conditions (Moravec, 2008; Patel, Marmot, & Terry, 1981). Reducing stress does not have to be complicated. For example, exercise is a great stress reduction activity (Salmon, 2001) that has a myriad of health benefits.



Figure 8.27: How do you cope with stress when stuck in traffic?

Coping Strategies: Coping is often classified into two categories: Problem-focused coping or emotion-focused coping (Carver, Scheier, & Weintraub, 1989). **Problem-focused coping** *is thought of as actively addressing the event that is causing stress in an effort to solve the issue at hand.* For example, say you have an important exam coming up next week. A problem-focused strategy might be to spend additional time over the weekend studying to make sure you understand all of the material. **Emotion-focused coping**, on the other hand, *regulates the emotions that come with stress.* In the above examination example, this might mean watching a funny movie to take your mind off the anxiety you are feeling. In the short term, emotion-focused coping might reduce feelings of stress, but problem-focused coping seems to have the greatest impact on mental wellness (Billings & Moos, 1981; Herman-Stabl, Stemmler, & Petersen, 1995). That being said, when events are uncontrollable (e.g., the death of a loved one), emotion-focused coping directed at managing your feelings, at first, might be the better strategy. Therefore, it is always important to consider the match of the stressor to the coping strategy when evaluating its plausible benefits.

8.12: Erikson- Generativity vs Stagnation

According to Erikson (1982) **generativity** *encompasses procreativity, productivity, and creativity.* This stage includes the generation of new beings, new products, and new ideas, as well as self-generation concerned with further identity development. Erikson believed that the stage of generativity, during which one established a family and career, was the longest of all the stages. Individuals at midlife are primarily concerned with leaving a positive legacy of themselves, and according to Erikson (1950) parenthood is the primary generative type. Erikson understood that work and family relationships 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 and working, Erikson also described individuals being involved in the community during this stage. A sense of stagnation occurs when one is not active in generative matters, however, stagnation can motive a person to redirect energies into more meaningful activities.

Erikson identified "virtues" for each of his eight stages, and they refer to what the individual achieves when the stage is successfully reconciled. The virtue emerging when one achieves generativity is "Care". Erikson believed that those in middle adulthood should "take care of the persons, the products, and the ideas one has learned to care for" (Erikson, 1982, p. 67). Further, Erikson believed that the strengths gained from the six earlier stages are essential for the generational task of cultivating strength in the next generation. Erikson further argued that generativity occurred best after the individual had resolved issues of identity and intimacy (Peterson & Duncan, 2007).



Figure 8.28: Generativity at midlife.

Research has demonstrated that generative adults possess many positive characteristics, including good cultural knowledge and healthy adaptation to the world (Peterson & Duncan, 2007). Using the Big 5 personality traits, generative women and men scored high on conscientiousness, extraversion, agreeableness, openness to experience, and low on neuroticism (de St. Aubin & McAdams, 1995; Peterson, Smirles, & Wentworth, 1997). Additionally, women scoring high in generativity at age 52 were rated high in positive personality characteristics, satisfaction with marriage and motherhood, and successful aging at age 62 (Peterson & Duncan, 2007). Similarly, men rated higher in generativity at midlife were associated with stronger global cognitive functioning (e.g., memory, attention, calculation), stronger executive functioning (e.g., response inhibition, abstract thinking, cognitive flexibility), and lower levels of depression in late adulthood (Malone, Liu, Vaillant, Rentz, & Waldinger, 2016).

Erikson (1982) indicated that at the end of this demanding stage, individuals may withdraw as generativity is no longer expected in late adulthood. This releases elders from the task of care taking or working. However, not feeling needed or challenged may result in stagnation, and consequently one should not fully withdraw from generative tasks as they enter Erikson's last stage in late adulthood.

8.13: Midlife Relationships

The **sandwich generation** refers to *adults who have at least one parent age 65 or older and are either raising their own children or providing support for their grown children*. According to a recent 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 (see Figure 8.29). 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.

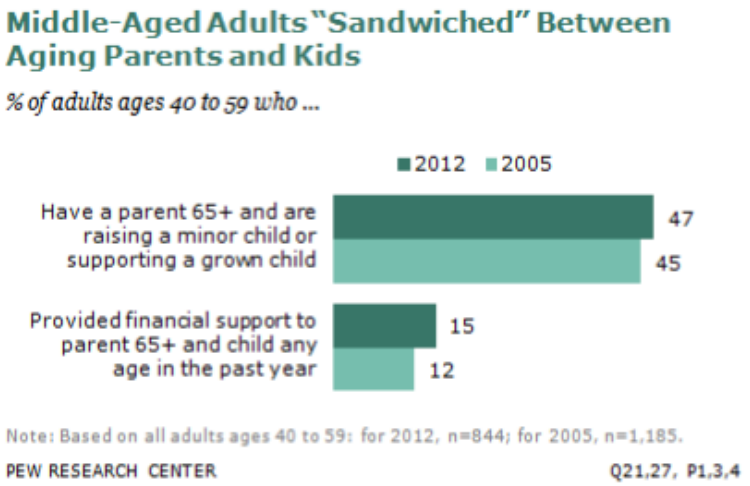


Figure 8.29: Middle-Age Adults "Sandwiched" Between Aging Parents and Kids.

Seventy-one percent of the sandwich generation is age 40-59, 19% were younger than 40, and 10% were 60 or older. Hispanics are more likely to find themselves supporting two generations; 31% have parents 65 or older and a dependent child, compared with 24%

of whites and 21% of blacks (Parker & Patten, 2013). Women are more likely to take on the role of care provider for older parents in the U.S. and Germany (Pew Research, 2015). About 1 in 5 women say they have helped with personal care, such as getting dressed or bathing, of aging parents in the past year, compared with 8% of men in the U.S. and 4% in Germany. In contrast, in Italy men are just as likely (25%) as women (26%) to have provided personal care.

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 and children did report greater financial strain (see Figure 8.30). Only 28% reported that they were living comfortably versus 41% of those who were not also supporting their parents. Almost one third were just making ends meet, compared with 17% of those who did not have the additional financial burden of aging parents.

Financial Stress and the Sandwich Generation

Q: How would you describe your household's financial situation? (%)

	Sandwich Generation	
	Supporting parent 65+	Not supporting parent 65+
Live comfortably	28	41
Meet basic expenses with a little left over	30	31
Just meet basic expenses	30	17
Don't have enough to meet basic expenses	11	10

Notes: Based on "sandwich generation," n=553. First column refers to those who gave financial support to a parent within the past year; the second column refers to those who did not. "Don't know/Refused" responses not shown.

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Figure 8.30: Financial Stress and the Sandwich Generation.

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.

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 martial relationships (Ahlborg, Misvaer, & Möller, 2009; Bouchard, 2013). Several studies have reported that martial 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: As you read in Chapter 7, 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**.

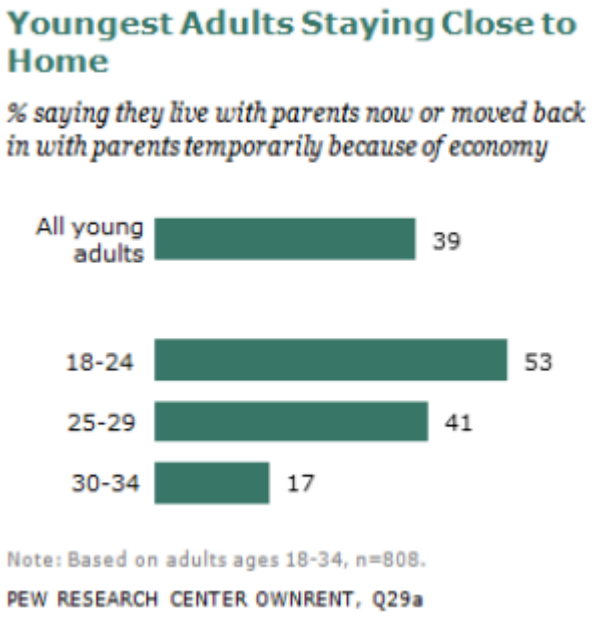


Figure 8.31: Youngest Adults Staying Close to Home.

Figure 8.31 shows the number of young people who are still living at home (Parker, 2012). In addition, 63% of 18 to 34 year-olds know someone who has returned to live with their parents. 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%).

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.

8.14: Middle Adult Lifestyles

Singlehood: According to a recent Pew Research study, 16 per 1,000 adults age 45 to 54 have never-married, and 7 per 1,000 adults age 55 and older have never married in the U. S. (Wang & Parker, 2014). However, some of them may be living with a partner. In addition, some singles at midlife may be single through divorce or widowhood. Bella DePaulo (2014) has challenged the idea that singles, especially the always single, fair worse emotionally and in health when compared to those who are married. DePaulo suggests that there is a bias in how studies examine the benefits of marriage. Most studies focus on only a comparison between married versus not married, which does not include a separate comparison between those who have always been single, and those who are single because of divorce or widowhood. Her research, along with that of others, has found that those who are married may be more satisfied with life than the divorced or widowed, but there is little difference between married and always single, especially when comparing those who are recently married with those who have been married for four or more years. It appears that once the initial blush of the honeymoon wears off, those who are wedded are no happier or healthier than those who remained single. This might also suggest that there may be problems with how the "married" category is also seen as one homogeneous group.

Online Dating: Montenegro (2003) surveyed over 3,000 singles aged 40–69, and almost half of the participants reported their most important reason for dating was to have someone to talk to or do things with. Additionally, sexual fulfillment was also identified as an important goal for many. Alterovitz & Mendelsohn (2013) reviewed online personal ads for men and women over age 40 and found that romantic activities and sexual interests were mentioned at similar rates among the middle-age and young-old age groups, but less for the old-old age group.

Marriage: As you read in Chapter 7, there has been a number of changes in the marriage rate as more people are cohabitating, more are deciding to stay single, and more are getting married at a later age.

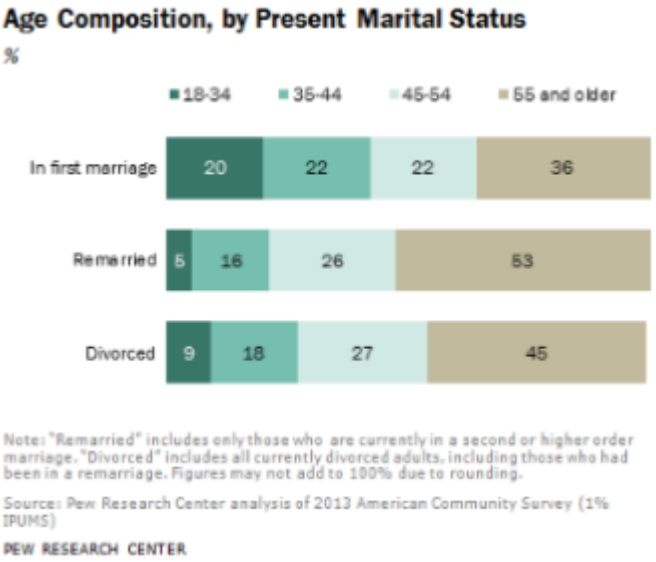


Figure 8.32: Age Composition, by Present Marital Status.

As you can see in Figure 8.32, 48% of adults age 45-54 are married; either in their first marriage (22%) or have remarried (26%). This makes marriage the most common relationship status for middle-aged adults in the United States. Marital satisfaction tends to increase for many couples in midlife as children are leaving home (Landsford, Antonucci, Akiyama, & Takahashi, 2005).

Not all researchers agree. They suggest that those who are unhappy with their marriage are likely to have gotten divorced by now, making the quality of marriages later in life only look more satisfactory (Umberson, Williams, Powers, Chen, & Campbell, 2005).

Divorce: Livingston (2014) found that 27% of adults age 45 to 54 were divorced (see Figure 8.32). Additionally, 57% of divorced adults were women. This reflects the fact that men are more likely

to remarry than are women. Two-thirds of divorces are initiated by women (AARP, 2009). Most divorces take place within the first 5 to 10 years of marriage. This time line reflects people's initial attempts to salvage the relationship. After a few years of limited success, the couple may decide to end the marriage. It used to be that divorce after having been married for 20 or more years was rare, but in recent years the divorce rate among more long-term marriages has been increasing. Brown and Lin (2013) note that while the divorce rate in the U.S. has declined since the 1990s, the rate among those 50 and older has doubled. They suggest several reasons for the "graying of divorce". There is less stigma attached to divorce today than in the past. Some older women are out-earning their spouses, and thus may be more financially capable of supporting themselves, especially as most of their children have grown. Finally, given increases in human longevity, the prospect of living several more years or decades with an incompatible spouse may prompt middle-aged and older adults to leave the marriage.

Gottman and Levenson (2000) found that the divorces in early adulthood were more angry and conflictual, with each partner blaming the other for the failures in the marriage. In contrast, they found that at midlife divorces tended to be more about having grown apart, or a cooling off of the relationship. A survey by AARP (2009) found that men and women had diverse motivations for getting a divorce. Women reported concerns about the verbal and physical abusiveness of their partner (23%), drug/alcohol abuse (18%), and infidelity (17%). In contrast, men mentioned they had simply fallen out of love (17%), no longer shared interests or values (14%), and infidelity (14%). Both genders felt their marriage had been over long before the decision to divorce was made, with many of the middle-aged adults in the survey reporting that they stayed together because they were still raising children. Only 1 in 4 regretted their decision to divorce.

The effects of divorce are varied. Overall, young adults struggle more with the consequences of divorce than do those at midlife, as they have a higher risk of depression or other signs of problems

with psychological adjustment (Birditt & Antonucci, 2013). Divorce at midlife is more stressful for women. In the AARP (2009) survey, 44% of middle-aged women mentioned financial problems after divorcing their spouse, in comparison only 11% of men reported such difficulties. However, a number women who divorce in midlife report that they felt a great release from their day-to-day sense of unhappiness. Hetherington (Hetherington & Kelly, 2002) found that among the groups of divorcees she called the **enhancers**, *those who had used the experience to better themselves and seek more productive intimate relationships*, or the **competent loners**, *those who used their divorce experience to grow emotionally, but who choose to stay single*, the overwhelming majority were women.

Dating Post-Divorce: Most divorced adults have dated by one year after filing for divorce (Anderson et al., 2004; Anderson & Greene, 2011). One in four recent filers report having been in or were currently in a serious relationship, and over half were in a serious relationship by one year after filing for divorce. Not surprisingly, younger adults were more likely to be dating than were middle aged or older adults, no doubt due to the larger pool of potential partners from which they could to draw. Of course, these relationships will not all end in marriage. Teachman (2008) found that more than two thirds of women under the age of 45 had cohabited with a partner between their first and second marriages.

Dating for adults with children can be more of a challenge. Courtships are shorter in remarriage than in first marriages. When couples are "dating", there is less going out and more time spent in activities at home or with the children. So the couple gets less time together to focus on their relationship. Anxiety or memories of past relationships can also get in the way. As one Talmudic scholar suggests "when a divorced man marries a divorced woman, four go to bed." (Secombe & Warner, 2004).

Post-divorce parents **gatekeep,** *that is, they regulate the flow of information about their new romantic partner to their children*, in an attempt to balance their own needs for romance with consideration regarding the needs and reactions of their children. Anderson et

al. (2004) found that almost half (47%) of dating parents gradually introduce their children to their dating partner, giving both their romantic partner and children time to adjust and get to know each other. Many parents who use this approach do so to avoid their children having to keep meeting someone new until it becomes clearer that this relationship might be more than casual. It might also help if the adult relationship is on firmer ground so it can weather any initial push back from children when it is revealed. Forty percent are open and transparent about the new relationship at the outset with their children. Thirteen percent do not reveal the relationship until it is clear that cohabitation and or remarriage is likely. Anderson and colleagues suggest that practical matters influence which gatekeeping method parents may use. Parents may be able to successfully shield their children from a parade of suitors if there is reliable childcare available. The age and temperament of the child, along with concerns about the reaction of the ex-spouse, may also influence when parents reveal their romantic relationships to their children.

Rates of remarriage: The rate for remarriage, like the rate for marriage, has been declining overall. In 2013 the remarriage rate was approximately 28 per 1,000 adults 18 and older. This represents a 44% decline since 1990 and a 16% decline since 2008 (Payne, 2015). Brown and Lin (2013) found that the rate of remarriage dropped more for younger adults than middle aged and older adults, and Livingston (2014) found that as we age we are more likely to have remarried (see Figure 8.33). This is not surprising as it takes some time to marry, divorce, and then find someone else to marry. However, Livingston found that unlike those younger than 55, those 55 and up are remarrying at a higher rate than in the past. In 2013, 67% of adults 55-64 and 50% of adults 65 and older had remarried, up from 55% and 34% in 1960, respectively.

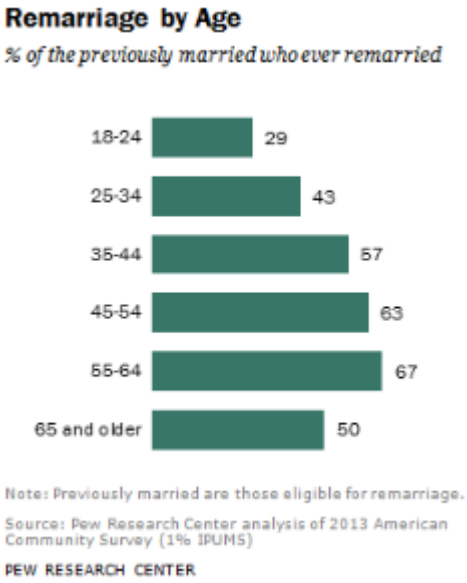


Figure 8.33: Remarriage by Age.

Men have a higher rate of remarriage at every age group starting at age 25 (Payne, 2015). Livingston (2014) reported that in 2013, 64% of divorced or widowed men compared with 52% of divorced or widowed women had remarried. However, this gender gap has narrowed over time. Even though more men still remarry, they are remarrying at a slower rate. In contrast, women are remarrying today more than they did in 1980. This gender gap has closed mostly among young and middle aged adults, but still persists among those 65 and older.

In 2012, Whites who were previously married were more likely to remarry than were other racial and ethnic groups (Livingston, 2014). Moreover, the rate of remarriage has increased among Whites, while the rate of remarriage has declined for other racial and ethnic groups. This increase is driven by White women, whose rate of remarriage has increased, while the rate for White males has declined.

Success of Remarriage: Reviews are mixed as to the happiness

and success of remarriages. While some remarriages are more successful, especially if the divorce motivated the adult to engage in self-improvement and personal growth (Hetherington & Kelly, 2002), a number of divorced adults end up in very similar marriages the second or third time around (Hetherington & Kelly, 2002). Remarriages have challenges that are not found in first marriages that may create additional stress in the marital relationship. There can often be a general lack of clarity in family roles and expectations when trying to incorporate new kin into the family structure, even determining the appropriate terms for these kin, along with their roles can be a challenge. Partners may have to navigate carefully their role when dealing with their partners' children. All of this may lead to greater dissatisfaction and even resentment among family members. Even though remarried couples tend to have more realistic expectations for marriage, they tend to be less willing to stay in unhappy situations. The rate of divorce among remarriages is higher than among first marriages (Payne, 2015), which can add additional burdens, especially when children are involved.

Children's Influence on Repartnering: Does having children affect whether a parent remarries? Goldscheider and Sassler (2006) found children residing with their mothers reduces the mothers' likelihood of marriage, only with respect to marrying a man without children. Further, having children in the home appears to increase single men's likelihood of marrying a woman with children (Stewart, Manning, & Smock, 2003). There is also some evidence that individuals who participated in a stepfamily while growing up may feel better prepared for stepfamily living as adults. Goldscheider and Kaufman (2006) found that having experienced family divorce as a child is associated with a greater willingness to marry a partner with children.



Figure 8.34: Family of four posing together for a photo.

When children are present after divorce, one of the challenges the adults encounter is how much influence the child will have when selecting a new partner. Greene, Anderson, Hetherington, Forgatch, and DeGarmo (2003) identified two types of parents. The child-focused parent allows the child's views, reactions, and needs to influence the repartnering. In contrast, the adult-focused parent expects that their child can adapt and should accommodate to parental wishes. Anderson and Greene (2011) found that divorced custodial mothers identified as more adult focused tended to be older, more educated, employed, and more likely to have been married longer. Additionally, adult focused mothers reported having less rapport with their children, spent less time in joint activities with their children, and the child reported lower rapport with their mothers. Lastly, when the child and partner were resisting one another, adult focused mothers responded more to the concerns of the partner, while the child focused mothers responded more to the concerns of the child. Understanding the implications of these two differing perspectives can assist parents in their attempts to repartner.

Grandparents

In addition to maintaining relationships with their children and aging parents, many people in middle adulthood take on yet another role, becoming a grandparent. The role of grandparent varies around the world. In multigenerational households, grandparents may play a greater role in the day-to-day activities of their grandchildren. While this family dynamic is more common in Latin America, Asia, and Africa, it has been on the increase in the U.S. (Pew Research Center, 2010).

The degree of grandparent involvement also depends on the proximity of the grandparents' home to the grandchildren. In developed nations, the greater mobility of the society can mean that grandparents may live long distances from their grandchildren. Technology has brought grandparents and their more distant grandchildren together. Sorenson and Cooper (2010) found that many of the grandfathers they interviewed would text, email, or Skype with their grandchildren in order to stay in touch.



Figure 8.35: Grandparents reading a book to their grandchildren.

Cherlin and Furstenberg (1986) describe three styles of grandparents: **Remote:** Thirty percent of grandparents rarely see their grandchildren. Usually they live far away from the grandchildren, but may also have a distant relationship. Contact is typically made on special occasions, such as holidays or birthdays. **Companionate**: Fifty-five percent of grandparents were described as "companionate". These grandparents do things with the grandchild but have little authority or control over them. They prefer to spend time with them without interfering in parenting. They are more like friends to their grandchildren. **Involved**: Fifteen percent of grandparents were described as "involved". These grandparents take a very active role in their grandchild's life. They children might even live with the grandparent. The involved grandparent is one who has frequent contact with and authority over the grandchild. Grandmothers, more so than grandfathers, play this role. In contrast, more grandfathers than grandmothers saw their role as family historian and family advisor (Neugarten and Weinstein, 1964).

Bengtson (2001) suggests that grandparents adopt different styles with different grandchildren, and over time may change styles as circumstances in the family change. Today more grandparents are the sole care providers for grandchildren, or may step in at times of crisis. With these changes grandparents are redefining how they see their role in the family with fewer adopting a more formal role (Hayslip, Henderson & Shore, 2003).

Early research on grandparents has routinely focused on grandmothers, with grandfathers often becoming invisible members of the family (Sorensen & Cooper, 2010). Yet, grandfathers stress the importance of their relationships with their grandchildren as strongly as do grandmothers (Waldrop et al., 1999). For some men, this may provide them with the opportunity to engage in activities that their occupations, as well as their generation's views of fatherhood and masculinity, kept them from engaging in with their own children (Sorenson & Cooper, 2010). Many of the grandfathers in Sorenson and Cooper's study felt that being a grandfather was

easier and a lot more enjoyable. Even among grandfathers that took on a more involved role, there was still a greater sense that they could be more light-hearted and flexible in their interactions with their grandchildren. Many grandfathers reported that they were more openly affectionate with their grandchildren than they had been with their own children.

8.15: Friendships

Adults of all ages who reported having a confidante or close friend with whom they could share personal feelings and concerns, believed these friends contributed to a sense of belonging, security, and overall wellbeing (Dunér & Nordstrom, 2007). Having a close friend is a factor in significantly lower odds of psychiatric morbidity including depression and anxiety (Harrison, Barrow, Gask, & Creed, 1999; Newton et al., 2008). The availability of a close friend has also been shown to lessen the adverse effects of stress on health (Kouzis & Eaton, 1998; Hawkley et al., 2008; Tower & Kasl, 1995). Additionally, poor social connectedness in adulthood is associated with a larger risk of premature mortality than cigarette smoking, obesity, and excessive alcohol use (Holt-Lunstad, Smith, & Layton, 2010).



Figure 8.36: Female friendships.

Female friendships and social support networks at midlife contribute significantly to a woman's feeling of life satisfaction and well-being (Borzumato-Gainey, Kennedy, McCabe, & Degges-White, 2009). Degges-White and Myers (2006) found that women who have supportive people in their life experience greater life satisfaction than do those who live a more solitary life. A friendship network or the presence of a confidant have both been identified for their

importance to women's mental health (Baruch & Brooks-Gunn, 1984). Unfortunately, with numerous caretaking responsibilities at home, it may be difficult for women to find time and energy to enhance the friendships that provide an increased sense of life satisfaction (Borzumato-Gainey et al., 2009). Emslie, Hunt and Lyons (2013) found that for men in midlife, the shared consumption of alcohol was important to creating and maintaining male friends. Drinking with friends was justified as a way for men to talk to each other, provide social support, relax, and improve mood. Although the social support provided when men drink together can be helpful, the role of alcohol in male friendships can lead to health damaging behavior from excessive drinking.

The importance of social relationships begins in early adulthood by laying down a foundation for strong social connectedness and facilitating comfort with intimacy (Erikson, 1959). To determine the impact of the quantity and quality of social relationships in young adulthood on middle adulthood, Carmichael, Reis, and Duberstein (2015) assessed individuals at age 50 on measures of social connection (types of relationships and friendship quality) and psychological outcomes (loneliness, depression, psychological well-being). Results indicated that the quantity of social interactions at age 20 and the quality, not quantity, of social interaction at age 30 predicted midlife social interactions. Those individuals who had high levels of social information seeking (quantity) at age 20 followed by less quantity in social relationships but greater emotional closeness (quality), resulted in positive psychosocial adjustment at midlife. Continuing to socialize widely in one's 30s appeared to negatively affect the development of intimacy, and consequently resulted in worse psychological outcomes at age 50.

Internet Friendships: What influence does the Internet have on friendships? It is not surprising that people use the Internet with the goal of meeting and making new friends (Fehr, 2008; McKenna, 2008). Researchers have wondered if the issue of not being face-to-face reduces the authenticity of relationships, or if the Internet really allows people to develop deep, meaningful connections.

Interestingly, research has demonstrated that virtual relationships are often as intimate as in-person relationships; in fact, Bargh and colleagues found that online relationships are sometimes more intimate (Bargh, McKenna, & Fitsimons, 2002). This can be especially true for those individuals who are more socially anxious and lonely as such individuals are more likely to turn to the Internet to find new and meaningful relationships (McKenna, Green, & Gleason, 2002). McKenna and colleagues suggest that for people who have a hard time meeting and maintaining relationships, due to shyness, anxiety, or lack of face-to-face social skills, the Internet provides a safe, nonthreatening place to develop and maintain relationships. Similarly, Benford (2008) found that for high-functioning autistic individuals, the Internet facilitated communication and relationship development with others, which would have been more difficult in face-to-face contexts, leading to the conclusion that Internet communication could be empowering for those who feel frustrated when communicating face to face.

Workplace Friendships: Friendships often take root in the workplace, due to the fact that people are spending as much, or more, time at work than they are with their family and friends (Kaufman & Hotchkiss, 2003). Often, it is through these relationships that people receive mentoring and obtain social support and resources, but they can also experience conflicts and the potential for misinterpretation when sexual attraction is an issue. Indeed, Elsesser and Peplau (2006) found that many workers reported that friendships grew out of collaborative work projects, and these friendships made their days more pleasant.



Figure 8.37: Workplace friendships.

In addition to those benefits, Riordan and Griffeth (1995) found that people who worked in an environment where friendships could develop and be maintained were more likely to report higher levels of job satisfaction, job involvement, and organizational commitment, and they were less likely to leave that job. Similarly, a Gallup poll revealed that employees who had close friends at work were almost 50% more satisfied with their jobs than those who did not (Armour, 2007).

8.16: Women in Midlife

In Western society, aging for women is much more stressful than for men as society emphasizes youthful beauty and attractiveness (Slevin, 2010). The description that aging men are viewed as "distinguished" and aging women are viewed as "old" is referred to as the double standard of aging (Teuscher & Teuscher, 2006). Since women have traditionally been valued for their reproductive capabilities, they may be considered old once they are postmenopausal. In contrast, men have traditionally been valued for their achievements, competence and power, and therefore are not considered old until they are physically unable to work (Carroll, 2016). Consequently, women experience more fear, anxiety, and concern about their identity as they age, and may feel pressure to prove themselves as productive and valuable members of society (Bromberger, Kravitz, & Chang, 2013).

Attitudes about aging, however, do vary by race, culture, and sexual orientation. In some cultures, aging women gain greater social status. For example, as Asian women age they attain greater respect and have greater authority in the household (Fung, 2013). Compared to white women, Black and Latina women possess less stereotypes about aging (Schuler et al., 2008). Lesbians are also more positive about aging and looking older than heterosexuals (Slevin, 2010). The impact of media certainly plays a role in how women view aging by selling anti-aging products and supporting cosmetic surgeries to look younger (Gilleard & Higgs, 2000).

8.17: Religion and Spirituality

Grzywacz and Keyes (2004) found that in addition to personal health behaviors, such as regular exercise, healthy weight, and not smoking, social behaviors, including involvement in religious-related activities, have been shown to be positively related to optimal health. However, it is not only those who are involved in a specific religion that benefit, but so too do those identified as being spiritual. According to Greenfield, Vaillant, and Marks (2009) **religiosity** *refers to engaging with a formal religious group's doctrines, values, traditions, and co-members.* In contrast, **spirituality** *refers to an individual's intrapsychic sense of connection with something transcendent (that which exists apart from an not limited by the material universe) and the subsequent feelings of awe, gratitude, compassion, and forgiveness.* Research has demonstrated a strong relationship between spirituality and psychological well-being, irrespective of an individual's religious participation (Vaillant, 2008). Additionally, Sawatzky, Ratner, & Chiu (2005) found that spirituality was related to a higher quality of life for both individuals and societies.



Figure 8.38: Spirituality and psychological well-being.

Based on reports from the 2005 National Survey of Midlife in the United States, Greenfield et al. (2009) found that higher levels of spirituality were associated with lower levels of negative affect and higher levels of positive affect, personal growth, purpose in life, positive relationships with others, self-acceptance, environmental mastery, and autonomy. In contrast, formal religious participation was only associated with higher levels of purpose in life and personal growth among just older adults and lower levels of autonomy. In summary, it appears that formal religious participation and spirituality relate differently to an individual's overall psychological well-being.

Age: Older individuals identify religion/spirituality as being more important in their lives than those younger (Beit-Hallahmi & Argyle, 1998). This age difference has been explained by several factors including that religion and spirituality assist older individuals in coping with age- related losses, provide opportunities for socialization and social support in later life, and demonstrate a

cohort effect in that older individuals were socialized more to be religious and spiritual than those younger (Greenfield et al., 2009).

Gender: In the United States, women report identifying as being more religious and spiritual than men do (de Vaus & McAllister, 1987). According to the Pew Research Center (2016), women in the United States are more likely to say religion is very important in their lives than men (60% vs. 47%). American women also are more likely than American men to say they pray daily (64% vs. 47%) and attend religious services at least once a week (40% vs. 32%). Theories to explain this gender difference include that women may benefit more from the social-relational aspects of religion/spirituality because social relationships more strongly influence women's mental health. Additionally, women have been socialized to internalize the behaviors linked with religious values, such as cooperation and nurturance, more than males (Greenfield et al., 2009).



Figure 8.39: Gender difference in religion and spirituality.

Worldwide: To measure the religious beliefs and practices of men and women around the world, the Pew Research Center (2016) conducted surveys of the general population in 84 countries

between 2008 and 2015. Overall, an estimated 83% of women worldwide identified with a religion compared with 80% of men. This equaled 97 million more women than men identifying with a religion. There were no countries in which men were more religious than women by 2 percentage points or more. Among Christians, women reported higher rates of weekly church attendance and higher rates of daily prayer. In contrast, Muslim women and Muslim men showed similar levels of religiousness, except frequency of attendance at worship services. Because of religious norms, Muslim men worshiped at a mosque more often than Muslim women. Similarly, Jewish men attended a synagogue more often than Jewish women. In Orthodox Judaism, communal worship services cannot take place unless a minyan, or quorum of at least 10 Jewish men, is present, thus insuring that men will have high rates of attendance. Only in Israel, where roughly 22% of all Jewish adults self-identify as Orthodox, did a higher percentage of men than women report engaging in daily prayer.

8.18: Canadian Resources

Below are resources that provide the Canadian context related to middle adulthood.

- The Vanier Institute of the Family. (2017). A *Snapshot of Men, Work and Family Relationships in Canada.* https://vanierinstitute.ca/a-snapshot-of-men-work-and-family-relationships-in-canada/
- The Vanier Institute of the Family. (2017). A *Snapshot of Women, Work and Family in Canada.* https://vanierinstitute.ca/a-snapshot-of-women-work-and-family-in-canada/
- Statistics Canada. (2021). *Care counts: Caregivers in Canada, 2018* [Infographic]. https://www150.statcan.gc.ca/n1/en/pub/11-627-m/11-627-m2020001-eng.pdf?st=4ZDXENTS
- Statistics Canada. (2019). *Family matters: Being separated or divorced in Canada* [Infographic]. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2019033-eng.htm
- The Vanier Institute of the Family. (2017). *Women, Caregiving and Work in Canada.* https://vanierinstitute.ca/infographic-women-caregiving-and-work-in-canada/

8.19: Test your knowledge



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9: LATE ADULTHOOD

Learning Objectives: Late Adulthood Definition and Demographics

- Describe the increase in the number of individuals who are currently identified as late adults
- Describe the increase in late adulthood worldwide
- Explain gender and ethnic differences in the number of individuals identified as late adults
- Explain the different ways developmental psychologists describe aging
- Explain the difference between life span and life expectancy
- Define the three age categories for late adulthood
- Explain what factors contribute to becoming a centenaria

Late adulthood spans the time when we reach our mid-sixties until death. This is the longest developmental stage across the lifespan. In this chapter, we will consider the growth in numbers for those in late adulthood, how that number is expected to change in the future, and the implications this will bring to both the United States and worldwide. We will also examine several theories of human aging, the physical, cognitive, and socioemotional changes that occur with this population, and the vast diversity among those in this developmental stage. Further, ageism and many of the myths associated with those in late adulthood will be explored.

9.1: Late Adulthood

Late adulthood, which includes those aged 65 years and above, is the fastest growing age division of the United States population (Gatz, Smyer, & DiGilio, 2016). Currently, one in seven Americans is 65 years of age or older. The first of the baby boomers (born from 1946-1964) turned 65 in 2011, and approximately 10,000 baby boomers turn 65 every day. By the year 2050, almost one in four Americans will be over 65, and will bed expected to live longer than previous generations. According to the U. S. Census Bureau (2014b) a person who turned 65 in 2015 can expect to live another 19 years, which is 5.5 years longer than someone who turned 65 in 1950. This increasingly aged population has been referred to as the "Graying of America". This "graying" is already having significant effects on the nation in many areas, including work, health care, housing, social security, caregiving, and adaptive technologies. Table 9.1 shows the 2012, 2020, and 2030 projected percentages of the U.S. population ages 65 and older.

***Table 9.1:* P**
Compiled from data from An Aging Nation: The older populati

	Percent of United States Population
65 years and older	
65–69	
70–74	
75–79	
80–84	
85 years and older	

The "Graying" of the World

Even though the United States is aging, it is still younger than most other developed countries (Ortman, Velkoff, & Hogan, 2014). Germany, Italy, and Japan all had at least 20% of their population aged 65 and over in 2012, and Japan had the highest percentage of elderly. Additionally, between 2012 and 2050, the proportion aged 65 and over is projected to increase in all developed countries. Japan is projected to continue to have the oldest population in 2030 and 2050. Table 9.2 shows the percentages of citizens aged 65 and older in select developed countries in 2012 and projected for 2030 and 2050.

***Table* 9.2: Percenta**
Compiled from data from An Aging Nation: The older populati

	Percent of Population 65 and Older
America	
Japan	
Germany	
Italy	
Canada	
Russia	

According to the National Institute on Aging (NIA, 2015b), there are 524 million people over 65 worldwide. This number is expected to increase from 8% to 16% of the global population by 2050. Between 2010 and 2050, the number of older people in less 250%, compared with only a 71% increase in developed countries. Declines in fertility and improvements in longevity account for the percentage increase for those 65 years and older. In more developed countries, fertility fell below the replacement rate of two live births per woman by the 1970s, down from nearly three children per woman around 1950. Fertility rates also fell in many less developed countries from an average of six children in 1950 to an average of two or three children in 2005. In 2006, fertility was at or below the two-child replacement level in 44 less developed countries (NIA, 2015d).



Figure 9.1: Age is increasing worldwide.

In total number, the United States is projected to have a larger older population than the other developed nations, but a smaller older population compared with China and India, the world's two most populous nations (Ortman et al., 2014). By 2050, China's older population is projected to grow larger than the total U.S. population today. As the population ages, concerns grow about who will provide for those requiring long-term care. In 2000, there were about 10 people 85 and older for every 100 persons between ages 50 and 64. These midlife adults are the most likely care providers for their aging parents. The number of old requiring support from their children is expected to more than double by the year 2040 (He, Sengupta, Velkoff, & DeBarros, 2005). These families will certainly need external physical, emotional, and financial support in meeting this challenge.

9.2: Life Expectancy

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.

***Table* 9.3: 2012 U. S. L**
Compiled from data from An Aging Nation: The older population i

Demogra
All Grou
Non-Hispanic White and As
Non-Hispanic Black and America
Hispan

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.



Figure 9.2: Healthy Life Expectancy.

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).

Gender Differences in Life Expectancy

Biological Explanations: Biological differences in sex chromosomes and different pattern of gene expression is theorized as one reason why females live longer (Chmielewski, Boryslawski, & Strzelec, 2016). Males are heterogametic (XY), whereas females are homogametic (XX) with respect to the sex chromosomes. Males can only express their X chromosome genes that come from the mother, while females have an advantage by selecting the "better" X chromosome from their mother or father, while inactivating the "worse" X chromosome. This process of selection for "better" genes is impossible in males and results in the greater genetic and developmental stability of females.

In terms of developmental biology, women are the "default" sex, which means that the creation of a male individual requires a sequence of events at a molecular level. According to Chmilewski et al. (2016):

> These events are initiated by the activity of the *SRY* gene located on the Y chromosome. This activity and change in the direction of development results in a greater number of disturbances and developmental disorders, because the normal course of development requires many different factors and mechanisms, each of which must work properly and at a specific stage of the development. (p. 134)

Men are more likely to contract viral and bacterial infections, and their immunity at the cellular level decreases significantly faster with age. Although women are slightly more prone to autoimmune and inflammatory diseases, such as rheumatoid arthritis, the gradual deterioration of the immune system is slower in women (Caruso, Accardi, Virruso, & Candore, 2013; Hirokawa et al., 2013).

Looking at the influence of hormones, estrogen levels in women appear to have a protective effect on their heart and circulatory systems (Viña, Borrás, Gambini, Sastre, & Pallardó, 2005). Estrogens

also have antioxidant properties that protect against harmful effects of free radicals, which damage cell components, cause mutations, and are in part responsible for the aging process. Testosterone levels are higher in men than in women, and are related to more frequent cardiovascular and immune disorders. The level of testosterone is also responsible, in part, for male behavioral patterns, including increased level of aggression and violence (Martin, Poon, & Hagberg, 2011; Borysławski & Chmielewski, 2012). Another factor responsible for risky behavior is the frontal lobe of the brain. The frontal lobe, which controls judgment and consideration of an action's consequences, develops more slowly in boys and young men. This lack of judgment affects lifestyle choices, and consequently many more boys and men die by smoking, excessive drinking, accidents, drunk driving, and violence (Shmerling, 2016).

Lifestyle Factors: Certainly not all the reasons women live longer than men are biological. As previously mentioned, male behavioral patterns and lifestyle play a significant role in the shorter lifespans for males. One significant factor is that males work in more dangerous jobs, including police, fire fighters, and construction, and they are more exposed to violence. According to the Federal Bureau of Investigation (2014) there were 11,961 homicides in the U.S. in 2014 (last year for full data) and of those 77% were males.



Figure 9.3: Men have more dangerous jobs.

Males are also more than three times as likely to commit suicide (CDC, 2016a). Further, males serve in the military in much larger numbers than females. According to the Department of Defense (2015), in 2014 83% of all officers in the Services (Navy, Army, Marine Corps and Air Force) were male, while 85% of all enlisted service members were male.



Figure 9.4: Men benefit from a relationship with a doctor.

Additionally, men are less likely than women to have health insurance, develop a regular relationship with a doctor, or seek treatment for a medical condition (Scott, 2015). As mentioned in the middle adulthood chapter, women are more religious than men, which is associated with healthier behaviors (Greenfield, Vaillant & Marks, 2009). Lastly, social contact is also important as loneliness is considered a health hazard. Nearly 20% of men over 50 have contact with their friends less than once a month, compared to only 12% of women who see friends that infrequently (Scott, 2015). Overall, men's lower life expectancy appears to be due to both biological and lifestyle factors.

9.3: Age Categories in Late Adulthood

There have been many ways to categorize the ages of individuals in late adulthood. In this chapter, we will be dividing the stage into three categories: Young–old (65-84), oldest-old (85- 99), and centenarians (100+) for comparison. These categories are based on the conceptions of aging including, biological, psychological, social, and chronological differences. They also reflect the increase in longevity of those living to this latter stage.



Figure 9.5: Young-old experience positive well-being.

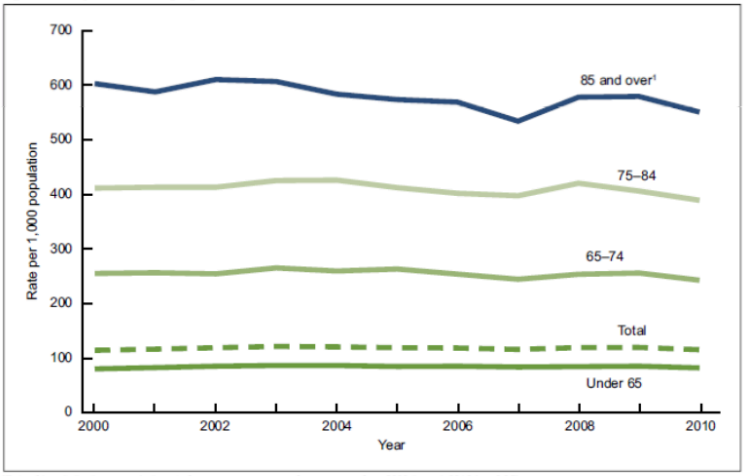
Young-old: Older adults between the ages of 65 and 84 comprise the young-old category (Ortman et al., 2014). This time-period has also been identified by Laslett (1989) as the "third age" because it follows childhood (the first age) and work and parenting (the

second age). According to Barnes (2011a), this age category spans the post-employment years until approximately 80-85 years when age-related limitations occur in the areas of physical, emotional, and cognitive development. Generally, this age span includes many positive aspects and is considered the "golden years" of adulthood. Why so positive?

Individuals at this age often have fewer responsibilities than in previous stages, and when combined with adequate finances and good health, they can pursue leisure and self-fulfillment opportunities. It is also an unusual age in that people are considered both in old age and not in old age (Rubinstein, 2002). When compared to those above 85 (known as the fourth age), the young-old experience relatively good health and social engagement (Smith, 2000), knowledge and expertise (Singer, Verhaeghen, Ghisletta, Lindenberger, & Baltes, 2003), and adaptive flexibility in daily living (Riediger, Freund, & Baltes, 2005). The young-old also show strong performance in attention, memory, and crystallized intelligence. In fact, those identified as young-old are more similar to those in midlife than those who are 85 and older. This group is less likely to require long-term care, to be dependent or poor, and more likely to be married, working for pleasure rather than income, and living independently. Chronic diseases, such as cardiovascular disease, hypertension, and cancer, are among the most common (especially later in this period), but because they are linked to lifestyle choices, they typically can be can prevented, lessoned, or managed (Barnes, 2011b). Overall, those in this age period feel a sense of happiness and emotional well-being that is better than at any other period of adulthood (Carstensen, Fung, & Charles, 2003; George, 2009; Robins & Trzesniewski, 2005).

Oldest-old: This age group is sometimes called the "fourth-age" and often includes people who have more serious chronic ailments among the older adult population. In the U.S., the oldest-old represented 14% of the older adult population in 2015 (He, Goodkind, & Kowal, 2016). This age group is one of the fastest growing worldwide and is projected to increase more than 300%

over its current levels (NIA, 2015b). The oldest-old are projected to be nearly 18 million by 2050, or about 4.5% of the U. S. population, compared with less than 2% of the population today. Females comprise more than 60% of those 85 and older, but they also suffer from more chronic illnesses and disabilities than older males (Gatz et al., 2016).



¹Rate of hospitalization exceeds the rate for younger age groups for every year from 2000 through 2010 ($p < 0.05$).
SOURCE: CDC/NCHS, National Hospital Discharge Survey, 2000–2010.

Figure 9.6: Hospitalizations by age: United States 2000-2010.

While this age group accounts for only 2% of the U. S. population, it accounts for 9% of all hospitalizations (Levant, Chari & DeFrances, 2015). Those 85 and up are less likely to be discharged and more likely to die in hospital. The most common reasons for hospitalization for the oldest-old were congestive heart failure, pneumonia, urinary tract infections, septicemia, stroke, and hip fractures. In recent years, hospitalizations for many of these medical problems have been reduced. However, hospitalization for urinary tract infections and septicemia has increased for those 85 and older.

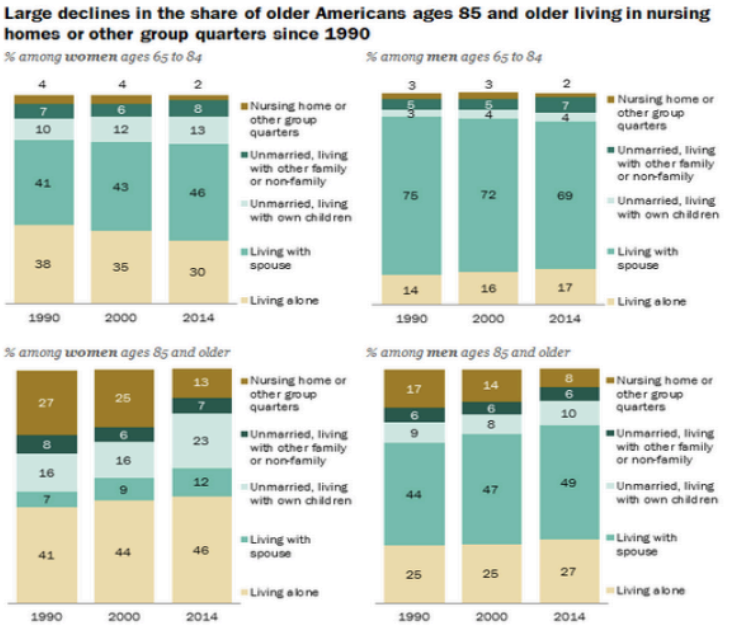


Figure 9.7: Large declines in the share of older Americans ages 85 and older living in nursing homes and other group quarters since 1990.

Those 85 and older are more likely to require long-term care and to be in nursing homes than the youngest-old. Almost 50% of the oldest-old require some assistance with daily living activities (APA, 2016). However, most still live in the community rather than a nursing home, as shown in Figure 9.7 (Stepler, 2016b). The oldest-old are less likely to be married and living with a spouse compared with the majority of the young-old (APA, 2016; Stepler, 2016c). As can be seen, in Figure 9.7, gender is also an important factor in the likelihood of being married or living with one's spouse.

Centenarians: A segment of the oldest-old are centenarians, that is, 100 and older, and some are also referred to as supercentarians,

those 110 and older (Wilcox, Wilcox & Ferrucci, 2008). In 2015 there were nearly half a million centenarians worldwide, and it is estimated that this age group will grow to almost 3.7 million by 2050. The U. S. has the most centenarians, but Japan and Italy have the most per capita (Stepler, 2016e). Most centenarians tended to be healthier than many of their peers as they were growing older, and often there was a delay in the onset of any serious disease or disability until their 90s. Additionally, 25% reached 100 with no serious chronic illnesses, such as depression, osteoporosis, heart disease, respiratory illness, or dementia (Ash et al. 2015). Centenarians are more likely to experience a rapid terminal decline in later life, meaning that for most of their adulthood, and even older adult years, they are relatively healthy in comparison to many other older adults (Ash et al., 2015; Wilcox et al., 2008). According to Guinness World Records (2016), Jeanne Louise Calment has been documented to be the longest living person at 122 years and 164 days old (See Figure 9.8).



Figure 9.8: Jeanne Louise Calment from France.

9.4: Theories of Aging

Learning Objectives: Physical Development in Late Adulthood

- Describe different theories of aging
- Describe the changes in physical appearance in late adulthood
- Describe the sensory changes in late adulthood
- Describe chronic health conditions during late adulthood
- Describe the importance of nutrition and exercise in late adulthood
- Describe the physical and functional changes in the brain during late adulthood
- Explain what happens in Parkinson's disease
- Explain how sleep patterns change in late adulthood
- Explain how sexuality changes in late adulthood

Why do we age? There are many theories that attempt to explain how we age, however, researchers still do not fully understand what factors contribute to the human lifespan (Jin, 2010). Research on aging is constantly evolving and includes a variety of studies involving genetics, biochemistry, animal models, and human longitudinal studies (NIA, 2011a). According to Jin (2010), modern biological theories of human aging involve two categories. The first is **Programmed Theories** *that follow a biological timetable, possibly a continuation of childhood development.* This timetable would depend on "changes in gene expression that affect the systems responsible for maintenance, repair, and defense responses," (p. 72). The second category includes **Damage or Error Theories** *which emphasize environmental factors that cause cumulative damage in organisms.* Examples from each of these categories will be discussed.



Figure 9.9: Theories of human aging.

Genetics: One's genetic make-up certainly plays a role in longevity, but scientists are still attempting to identify which genes are responsible. Based on animal models, some genes promote longer life, while other genes limit longevity. Specifically, longevity may be due to genes that better equip someone to survive a disease. For others, some genes may accelerate the rate of aging, while others decrease the rate. To help determine which genes promote longevity and how they operate, researchers scan the entire genome and compare genetic variants in those who live longer with those who have an average or shorter lifespan. For example, a National Institutes of Health study identified genes possibly associated with blood fat levels and cholesterol, both risk factors for coronary disease and early death (NIA, 2011a). Researchers believe that it is most likely a combination of many genes that affect the rate of aging.

Evolutionary Theory: Evolutionary psychology emphasizes the importance of natural selection; that is, those genes that allow one to survive and reproduce will be more likely to be transmitted to offspring. Genes associated with aging, such as Alzheimer Disease, do not appear until after the individual has passed their main reproductive years. Consequently, natural selection has not eliminated these damaging disorders from the gene pool. If these detrimental disorders occurred earlier in the development cycle, they may have been eliminated already (Gems, 2014).

Cellular Clock Theory: This theory suggests that biological aging

is due to the fact that normal cells cannot divide indefinitely. This is known as the Hayflick limit, and is evidenced in cells studied in test tubes, which divide about 40-60 times before they stop (Bartlett, 2014). But what is the mechanism behind this cellular senescence? *At the end of each chromosomal strand is a sequence of DNA that does not code for any particular protein, but protects the rest of the chromosome*, which is called a ***telomere***. With each replication, the telomere gets shorter. Once it becomes too short the cell does one of three things. *It can stop replicating by turning itself off*, called **cellular senescence.** *It can stop replicating by dying*, called **apoptosis.** Or, as in the development of cancer, it can continue to divide and become abnormal. Senescent cells can also create problems. While they may be turned off, they are not dead, thus they still interact with other cells in the body and can lead to an increase risk of disease. When we are young, senescent cells may reduce our risk of serious diseases such as cancer, but as we age they increase our risk of such problems (NIA, 2011a). Understanding why cellular senescence changes from being beneficial to being detrimental is still under investigation. The answer may lead to some important clues about the aging process.

DNA Damage: Over time DNA, which contains the genetic code for all organisms, accumulates damage. This is usually not a concern as our cells are capable of repairing damage throughout our life. Further, some damage is harmless. However, some damage cannot be repaired and remains in our DNA. Scientists believe that this damage, and the body's inability to fix itself, is an important part of aging (NIA, 2011a). As DNA damage accumulates with increasing age, it can cause cells to deteriorate and malfunction (Jin, 2010). Factors that can damage DNA include ultraviolet radiation, cigarette smoking, and exposure to hydrocarbons, such as auto exhaust and coal (Dollemore, 2006).

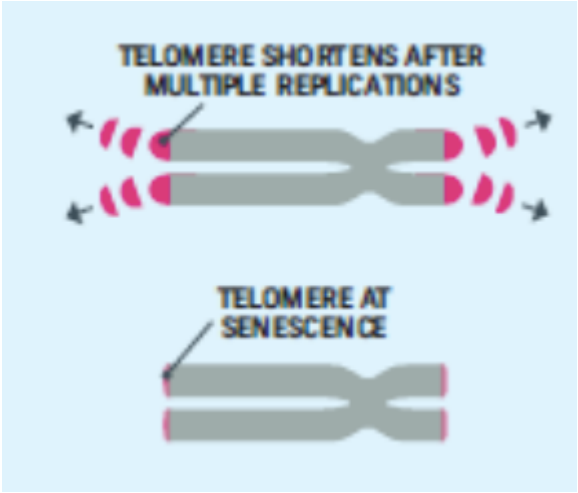


Figure 9.10: Telomeres and Cellular Senescence. Adapted from National Institute on Aging.

Mitochondrial Damage: Damage to mitochondrial DNA can lead to a decaying of the **mitochondria,** *which is a cell organelle that uses oxygen to produce energy from food.* The mitochondria convert oxygen to adenosine triphosphate (ATP) which provides the energy for the cell. When damaged, mitochondria become less efficient and generate less energy for the cell and can lead to cellular death (NIA, 2011a).

Free Radicals: When the mitochondria uses oxygen to produce energy, they also produce potentially harmful byproducts called oxygen free radicals (NIA, 2011a). The **free radicals** *are missing an electron and create instability in surrounding molecules by taking electrons from them.* There is a snowball effect (A takes from B and then B takes from C, etc.) that creates more free radicals which disrupt the cell and causes it to behave abnormally (See Figure 9.11). Some free radicals are helpful as they can destroy bacteria and other harmful organisms, but for the most part they cause damage in our cells and tissue. Free radicals are identified with disorders seen in those of advanced age, including cancer, atherosclerosis, cataracts, and neurodegeneration. Some research has supported

adding antioxidants to our diets to counter the effects of free radical damage because the antioxidants can donate an electron that can neutralize damaged molecules. However, the research on the effectiveness of antioxidants is not conclusive (Harvard School of Public Health, 2016).

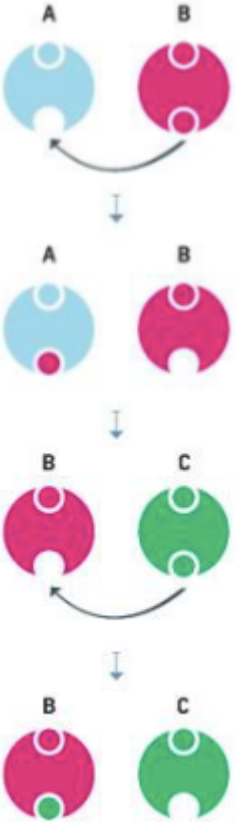


Figure 9.11: Free Radicals.

Immune and Hormonal Stress Theories: Ever notice how quickly U.S. presidents seem to age? Before and after photos reveal how stress can play a role in the aging process. When gerontologists study stress, they are not just considering major life events, such as unemployment, death of a loved one, or the birth of a child. They are

also including **metabolic stress**, *the life sustaining activities of the body*, such as circulating the blood, eliminating waste, controlling body temperature, and neuronal firing in the brain. In other words, all the activities that keep the body alive also create biological stress.



Figure 9.12: Barack Obama, 2012.

To understand how this stress affects aging, researchers note that both problems with the innate and adaptive immune system play a key role. The **innate immune system** *is made up of the skin, mucous membranes, cough reflex, stomach acid, and specialized cells that alert the body of an impending threat*. With age these cells lose their ability to communicate as effectively, making it harder for the body

to mobilize its defenses. The **adaptive immune system** *includes the tonsils, spleen, bone marrow, thymus, circulatory system and the lymphatic system that work to produce and transport T cells.* T-cells, *or lymphocytes*, fight bacteria, viruses, and other foreign threats to the body. T-cells are in a "naïve" state before they are programmed to fight an invader, and become "memory cells". These cells now remember how to fight a certain infection should the body ever come across this invader again. Memory cells can remain in your body for many decades, and why the measles vaccine you received as a child is still protecting you from this virus today. As older adults produce fewer new T-cells to be programmed, they are less able to fight off new threats and new vaccines work less effectively. The reason why the shingles vaccine works well with older adults is because they already have some existing memory cells against the varicella virus. The shingles vaccine is acting as a booster (NIA, 2011a).

Hormonal Stress Theory, also known as **Neuroendocrine Theory of Aging,** *suggests that as we age the ability of the hypothalamus to regulate hormones in the body begins to decline leading to metabolic problems* (American Federation of Aging Research (AFAR) 2011). This decline is linked to excess of the stress hormone cortisol. While many of the body's hormones decrease with age, cortisol does not (NIH, 2014a). The more stress we experience, the more cortisol released, and the more hypothalamic damage that occurs. Changes in hormones have been linked to several metabolic and hormone related problems that increase with age, such as diabetes (AFAR, 2011), thyroid problems (NIH, 2013), osteoporosis, and orthostatic hypotension (NIH, 2014a).

9.5: Physical Changes of Aging

The Baltimore Longitudinal Study on Aging (BLSA) (NIA, 2011b) 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. However, some key generalization can be made including heart muscles thickening with age, arteries becoming less flexible, and lung capacity diminishing. Kidneys become less efficient in removing waste from the blood, and the bladder loses its ability to store urine. Brain cells also lose some functioning, but new neurons can also be produced. Many of these changes are determined by genetics, lifestyle, and disease. Other changes in late adulthood include:

Body Changes: Everyone's body shape changes naturally as they age. According to the National Library of Medicine (2014) after age 30 people tend to lose lean tissue, and some of the cells of the muscles, liver, kidney, and other organs are lost. Tissue loss reduces the amount of water in your body and 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). The amount of body fat goes up steadily after age 30, and older individuals 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.

Skin and Hair: With age skin becomes thinner, less elastic, loses fat, and no longer looks plump and smooth. Veins and bones can be seen more easily and scratches, cuts, and bumps can take longer to heal. Years exposed to the sun may lead to wrinkles, dryness, age spots, and cancer. Older people may bruise more easily, and it can take longer for these bruises to heal. Some medicines or illnesses

may also cause bruising. Gravity can cause skin to sag and wrinkle, and smoking can wrinkle the skin. Also, seen in older adults are age spots, previously called "liver spots". They look like flat, brown spots and are often caused by years in the sun. Skin tags are small, usually flesh-colored growths of skin that have a raised surface. They become common as people age, especially for women, but both age spots and skin tags are harmless (NIA, 2015f).

Nearly everyone has hair loss as they age, and the rate of hair growth slows down as many hair follicles stop producing new hairs. The loss of pigment and subsequent graying begun in middle adulthood continues in late adulthood.

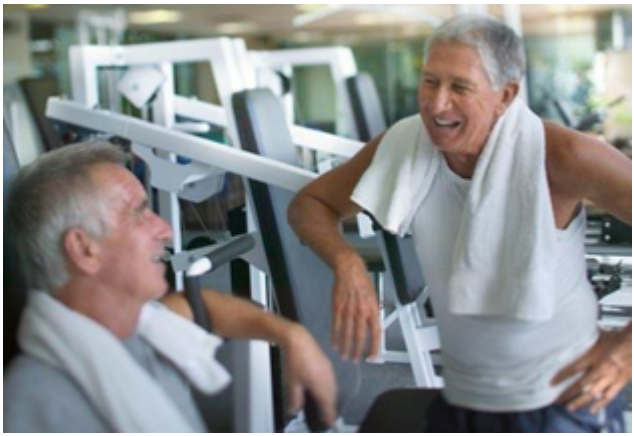


Figure 9.13: Exercise helps decrease sarcopenia.

Sarcopenia *is the loss of muscle tissue as a natural part of aging.* Sarcopenia is most noticeable in men, and physically inactive people can lose as much as 3% to 5% of their muscle mass each decade after age 30, but even when active muscle loss still occurs (Webmd, 2016). Symptoms include a loss of stamina and weakness, which can decrease physical activity and subsequently further shrink muscles. Sarcopenia typically happens faster around age 75, but it may also speed up as early as 65 or as late as 80. Factors involved in sarcopenia include a reduction in nerve cells responsible for sending signals to the muscles from the brain to begin moving, a

decrease in the ability to turn protein into energy, and not receiving enough calories or protein to sustain adequate muscle mass. Any loss of muscle is important because it lessens strength and mobility, and sarcopenia is a factor in frailty and the likelihood of falls and fractures in older adults. Maintaining strong leg and heart muscles are important for independence. Weight-lifting, walking, swimming, or engaging in other cardiovascular exercises can help strengthen the muscles and prevent atrophy.

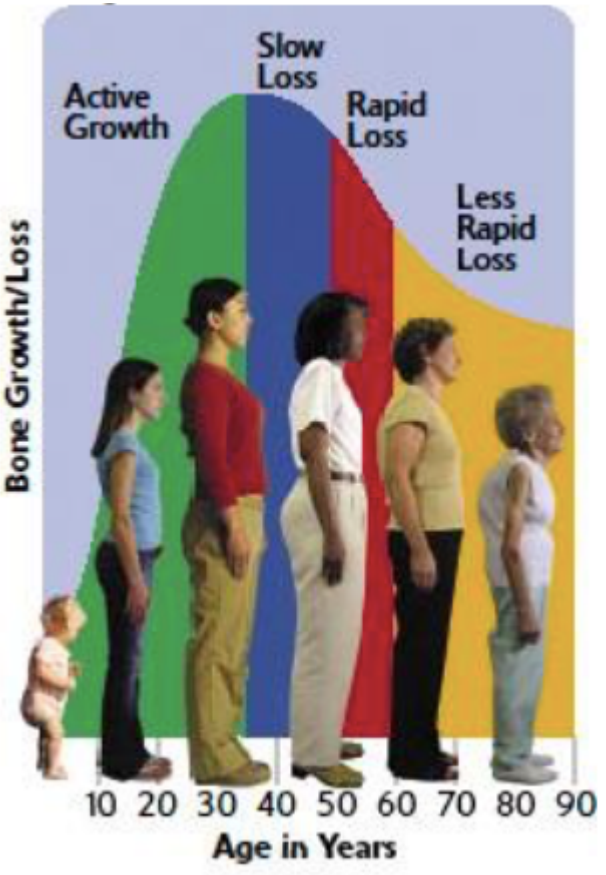


Figure 9.14: Bone growth changes.

Height and Weight: The tendency to become shorter as one ages

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 every 10 years after age 40, and height loss is even more rapid after age 70. A total of 1 to 3 inches in height is lost with aging. Changes in body weight vary for men and woman. Men often gain weight until about age 55, and then begin to lose weight later in life, possibly related to a drop in the male sex hormone testosterone. Women usually gain weight until age 65, and then begin to lose weight. Weight loss later in life occurs partly because fat replaces lean muscle tissue, and fat weighs less than muscle. Diet and exercise are important factors in weight changes in late adulthood (National Library of Medicine, 2014).

Sensory Changes in Late Adulthood

Vision: In late adulthood, all the senses show signs of decline, especially among the oldest-old. In the last chapter, you read about the visual changes that were beginning in middle adulthood, such as presbyopia, dry eyes, and problems seeing in dimmer light. By later adulthood these changes are much more common. Three serious eyes diseases are more common in older adults: Cataracts, macular degeneration, and glaucoma. Only the first can be effectively cured in most people.

Cataracts are *a clouding of the lens of the eye*. The lens of the eye is made up of mostly water and protein. The protein is precisely arranged to keep the lens clear, but with age some of the protein starts to clump. As more of the protein clumps together the clarity of the lens is reduced. While some adults in middle adulthood may show signs of cloudiness in the lens, the area affected is usually small enough to not interfere with vision. More people have problems with cataracts after age 60 (NIH, 2014b) and by age 75, 70% of adults will have problems with cataracts (Boyd, 2014). Cataracts also cause a discoloration of the lens, tinting it more yellow and then

brown, which can interfere with the ability to distinguish colors such as black, brown, dark blue, or dark purple.

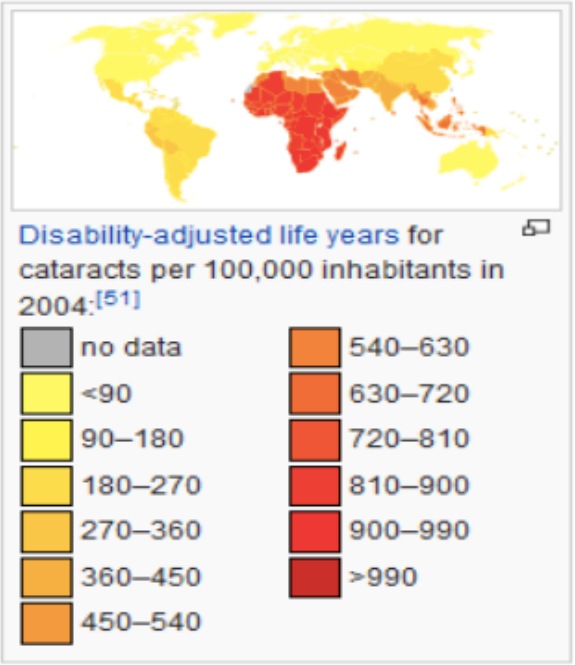


Figure 9.15: Disability-adjusted life years for cataracts per 100,000 inhabitants in 2004.

Risk factors besides age include certain health problems such as diabetes, high blood pressure, and obesity, behavioral factors such as smoking, other environmental factors such as prolonged exposure to ultraviolet sunlight, previous trauma to the eye, long-term use of steroid medication, and a family history of cataracts (NEI, 2016a; Boyd, 2014). Cataracts are treated by removing and replacing the lens of the eye with a synthetic lens. In developed countries, such as the United States, cataracts can be easily treated with surgery. However, in developing countries, access to such operations are limited, making cataracts the leading cause of blindness in late adulthood in Third World nations (Resnikoff,

Pascolini, Mariotti & Pokharel, 2004). As shown in Figure 9.15, areas of the world with limited medical treatment for cataracts often results in people living more years with a serious disability. For example, of those living in the darkest red color on the map, more than 990 out of 100,00 people have a shortened lifespan due to the disability caused by cataracts.

Older adults are also more likely to develop **age-related macular degeneration**, which is *the loss of clarity in the center field of vision, due to the deterioration of the macula, the center of the retina.* Macular degeneration does not usually cause total vision loss, but the loss of the central field of vision can greatly impair day-to-day functioning. There are two types of macular degeneration: dry and wet. The dry type is the most common form and occurs when tiny pieces of a fatty protein called drusen form beneath the retina. Eventually the macular becomes thinner and stops working properly (Boyd, 2016). About 10% of people with macular degeneration have the wet type, which causes more damage to their central field of vision than the dry form. This form is caused by an abnormal development of blood vessels beneath the retina. These vessels may leak fluid or blood causing more rapid loss of vision than the dry form.

The risk factors for macular degeneration include smoking, which doubles your risk (NIH, 2015a); race, as it is more common among Caucasians than African Americans or Hispanics/Latinos; high cholesterol; and a family history of macular degeneration (Boyd, 2016). At least 20 different genes have been related to this eye disease, but there is no simple genetic test to determine your risk, despite claims by some genetic testing companies (NIH, 2015a). At present, there is no effective treatment for the dry type of macular degeneration. Some research suggests that certain patients may benefit from a cocktail of certain antioxidant vitamins and minerals, but the results are mixed at best. They are not a cure for the disease nor will they restore the vision that has been lost. This "cocktail" can slow the progression of visual loss in some people (Boyd, 2016; NIH, 2015a). For the wet type medications that slow the growth

of abnormal blood vessels, and surgery, such as laser treatment to destroy the abnormal blood vessels may be used. Only 25% of those with the wet version may see improvement with these procedures (Boyd, 2016).

A third vision problem that increases with age is **glaucoma**, which *is the loss of peripheral vision, frequently due to a buildup of fluid in eye that damages the optic nerve*. As you age the pressure in the eye may increase causing damage to the optic nerve. The exterior of the optic nerve receives input from retinal cells on the periphery, and as glaucoma progresses more and more of the peripheral visual field deteriorates toward the central field of vision. In the advanced stages of glaucoma, a person can lose their sight. Fortunately, glaucoma tends to progresses slowly (NEI, 2016b).



Figure 9.16: Normal vision vs. cataracts, macular degeneration and glaucoma.

Glaucoma is the most common cause of blindness in the U.S. (NEI, 2016b). African Americans over age 40, and everyone else over age

60 has a higher risk for glaucoma. Those with diabetes, and with a family history of glaucoma also have a higher risk (Owsley et al., 2015). There is no cure for glaucoma, but its rate of progression can be slowed, especially with early diagnosis. Routine eye exams to measure eye pressure and examination of the optic nerve can detect both the risk and presence of glaucoma (NEI, 2016b). Those with elevated eye pressure are given medicated eye drops. Reducing eye pressure lowers the risk of developing glaucoma or slow its progression in those who already have it.

Hearing: As you read in Chapter 8, our hearing declines both in terms of the frequencies of sound we can detect and the intensity of sound needed to hear as we age. These changes continue in late adulthood. Almost 1 in 4 adults aged 65 to 74 and 1 in 2 aged 75 and older have disabling hearing loss (NIH, 2016). Table 9.4 lists some common signs of hearing loss.

Tab

Have trouble hearing over the telephone
Find it hard to follow conversations when two or more people are talking
Often ask people to repeat what they are saying
Need to turn up the TV volume so loud that others complain
Have a problem hearing because of background noise
Think that others seem to mumble
Can't understand when women and children speak to you

Presbycusis is a *common form of hearing loss in late adulthood that results in a gradual loss of hearing*. It runs in families and affects hearing in both ears (NIA, 2015c). Older adults may also notice **tinnitus**, *a ringing, hissing, or roaring sound in the ears*. The exact

cause of tinnitus is unknown, although it can be related to hypertension and allergies. It may come and go or persist and get worse over time (NIA, 2015c). The incidence of both presbycusis and tinnitus increase with age and males have higher rates of both around the world (McCormak, Edmondson-Jones, Somerset, & Hall, 2016).

Your auditory system has two jobs: To help you to hear, and to help you maintain balance. Your balance is controlled by the brain receiving information from the shifting of hair cells in the inner ear about the position and orientation of the body. With age this function of the inner ear declines which can lead to problems with balance when sitting, standing, or moving (Martin, 2014).

Taste and Smell: Our sense of taste and smell are part of our *chemical sensing system*. Our sense of taste, or gustation, appears to age well. Normal taste occurs when molecules that are released by chewing food stimulate taste buds along the tongue, the roof of the mouth, and in the lining of the throat. These cells send messages to the brain, where specific tastes are identified. After age 50 we start to lose some of these sensory cells. Most people do not notice any changes in taste until ones 60s (NIH: Senior Health, 2016b). Given that the loss of taste buds is very gradual, even in late adulthood, many people are often surprised that their loss of taste is most likely the result of a loss of smell.

Presbyomia	
Hyposmia	
Anosmia	
Dysomia	
Phantosmia	

Our sense of smell, or olfaction, decreases more with age, and problems with the sense of smell are more common in men than in women. Almost 1 in 4 males in their 60s have a disorder with the sense of smell, while only 1 in 10 women do (NIH: Senior Health, 2016b). This *loss of smell due to aging* is called **presbyosmia**. Olfactory cells are located in a small area high in the nasal cavity. These cells are stimulated by two pathways; when we inhale through the nose, or via the connection between the nose and the throat when we chew and digest food. It is a problem with this second pathway that explains why some foods such as chocolate or coffee seem tasteless when we have a head cold. There are several types of loss of smell. *Total loss of smell*, or **anosmia**, is extremely rare.

Problems with our chemical senses can be linked to other serious medical conditions such as Parkinson's, Alzheimer's, or multiple sclerosis (NIH: Senior Health, 2016a). Any sudden change should be checked out. Loss of smell can change a person's diet, with either a loss of enjoyment of food and eating too little for balanced nutrition, or adding sugar and salt to foods that are becoming blander to the palette.

Touch: Research has found that with age, people may experience

reduced or changed sensations of vibration, cold, heat, pressure, or pain (Martin, 2014). Many of these changes are also aligned with a number of medical conditions that are more common among the elderly, such as diabetes. However, there are changes in the touch sensations among healthy older adults. The ability to detect changes in pressure have been shown to decline with age, with it being more pronounced by the 6th decade and diminishing further with advanced age (Bowden & McNelty, 2013). Yet, there is considerable variability, with almost 40% showing sensitivity that is comparable to younger adults (Thornbury & Mistretta, 1981). However, the ability to detect the roughness/smoothness or hardness/softness of an object shows no appreciable change with age (Bowden & McNulty, 2013). Those who show increasing insensitivity to pressure, temperature, or pain are at risk for injury (Martin, 2014).

Pain: According to Molton and Terrill (2014), approximately 60%-75% of people over the age of 65 report at least some chronic pain, and this rate is even higher for those individuals living in nursing homes. Although the presence of pain increases with age, older adults are less sensitive to pain than younger adults (Harkins, Price, & Martinelli, 1986).



Figure 9.17: Pain from arthritis.

Farrell (2012) looked at research studies that included neuroimaging techniques involving older people who were healthy and those who experienced a painful disorder. Results indicated that there were age-related decreases in brain volume in those structures involved in pain. Especially noteworthy were changes in the prefrontal cortex, brainstem, and hippocampus. Women are more likely to identify feeling pain than men (Tsang et al., 2008). Women have fewer opioid receptors in the brain, and women also receive less relief from opiate drugs (Garrett, 2015). Because pain serves an important indicator that there is something wrong, a decreased sensitivity to pain in older adults is a concern because it can conceal illnesses or injuries requiring medical attention.

9.6: Nutrition

A healthy diet is necessary for older adults to increase mental acuteness, resistance to illness and disease, boost energy levels, improve immune system strength, recuperation speed, and have greater effectiveness in the management of chronic health problems (Mayer, 2016). The new MyPlate for Older Adults, a website from Tufts University, suggests that older adults should strive for 50% of their diet being fruits and vegetables; 25% grains, many of which should be whole grains; and 25% protein-rich foods, such as nuts, beans, fish, lean meat, poultry, and fat-free and low-fat Unfortunately, changes in sensory functions, such as smell and taste, along with loss of teeth, can derail an older adult's ability to eat right. Older adults are likely to use salt and sugar to flavor foods that no longer taste the way they once did. Several government websites provide older adults with alternatives to the salt shaker to make foods more palatable.



Figure 9.18: Couple enjoying lunch.

9.7: Chronic Conditions

Chronic illnesses *are illnesses that are ongoing, generally incurable conditions that require continuing medical attention and affect daily life*. As individuals live longer, diseases that affect older individuals will become more prevalent, and the burden of chronic illness grows with age. Less than 50% of adults 50-64 have a chronic condition, yet 90% aged 75 and up do (Cohen, 2011). Older women are more likely to have a chronic condition than are older men (83% vs. 88%) (CDC, 2009). Table 9.6 lists the percentage of older adults who have certain chronic illnesses based on the National Health Survey conducted in 2014. Other studies place the figure of diabetes in older adults at 26% (CDC, 2014).

Table 9.6:
Ad

High Cholesterol
Hypertension
Arthritis
Cancer
Diabetes
Heart disease
Ulcers
Stroke
Asthma
Kidney disease
Chronic bronchitis
Emphysema

Cancer and Major Cardiovascular Disease: As discussed in chapter 8, cancer and cardiovascular disease are the overall leading causes of death, and they are especially high reasons for death in middle and late adults. Table 9.7 identifies the percentages of deaths due to cancer and cardiovascular disease for selected age groups in 2013; the most recent year for data (Xu, Murphy, Kochanek, & Bastian, 2016).

***Table* 9.7: Death Percentages**
Adapted

2013 Causes of Death
Cancer
Major Cardiovascular Disease

Cancer: Advancing age is a significant risk factor for cancer, with persons over 65 accounting for 60% of newly diagnosed cancer and 70% of all cancer deaths (Berger et al., 2006). Additionally, more than 70% of the mortality associated with many cancers, including prostate, bladder, colon, uterus, pancreas, stomach, rectum and lung occur in patients 65 and older. Other conditions that affect the elderly can occur with cancer, including anemia, coronary artery diseases, congestive heart failure, chronic obstructive pulmonary diseases, renal insufficiency, cerebrovascular diseases, neurovascular complications of diabetes mellitus, and arthritis that restricts mobility (Balducci & Extermann, 2000). Comorbidity will complicate treatment.

Balducci and Extermann (2000) examined several concerns of cancer treatment in the elderly. With aging, there is a decline in multiple organ systems that can adversely affect the ability of medications to treat the cancer. Chemotherapy has been found to compromise the cognitive function of those being treated for cancer, and it may further exacerbate dementia and elderly cognitive declines. Frail individuals, defined as having limited life expectancy and near-to- exhausted functional reserves, are also not considered candidates for more toxic forms of chemotherapy.

With cancer, the prevalence and risk of malnutrition are higher, and diminished visual and hearing function makes elderly cancer patients more susceptible to environmental injury. Screening for depression is also recommended because depression is associated with weight loss, failure to thrive, and may reduce the motivation to receive treatment. Consequently, depression has been associated with decreased survival rates in the elderly. Due to the projected increase in the total number of older patients with cancer, it is recommended that physicians and caretakers have expertise in both oncology and geriatrics (Berger et al., 2006).

Heart Disease: There are changes to the heart that happen with age, and some may increase a person's risk of heart disease. These include stiffening blood vessels and valves, which may result in leaks or problems pumping blood out of the heart (NIA, 2012). As previously stated, heart disease is the leading cause of death for those in late adulthood (CDC, 2016b). There are different types of heart disease, and as already discussed in chapter 8, the most common is atherosclerosis, the buildup of fatty deposits or plaques in the walls of arteries. As plaque builds up, blood is unable to flow normally and bring oxygen throughout the body, including to the heart. Depending on where the buildup is, atherosclerosis can cause a heart attack, leg pain, or a stroke. However, Atherosclerosis is not part of normal aging. Many of the problems older people have with their heart and blood vessels are caused by disease and not by aging. For example, an older heart can normally pump blood as strong as a younger heart, while less ability to pump blood is caused by disease. Therefore, leading a heart-healthy lifestyle is most important to keeping one's heart strong in late adulthood.

Arthritis: Arthritis and other rheumatic conditions are the most common cause of disability among US adults, and have been the most common cause of disability among US adults for the past 15 years (NIH: National Institute of Arthritis and Musculoskeletal and Skin Diseases, 2014). According to the NIH, approximately 62% of adults with arthritis are 65 years old and up. Almost 1 in 2 older adults with arthritis have some degree of mobility limitations, such

as climbing stairs, walking, and grasping objects. The pain and other limitations of arthritis can also increase the risk of depression and other forms of mental distress.

Osteoarthritis is the most common type of arthritis. "When the cartilage, the slick, cushioning surface on the ends of bones wears away, bone rubs against bone, causing pain, swelling and stiffness. Over time, joints can lose strength and pain may become chronic" (Arthritis Foundation, 2017, para 3). Common risk factors for osteoarthritis include genetics, obesity, age, previous injury, and other medical conditions.

Osteoporosis and Kyphosis: Osteoporosis *is a disease that thins and weakens bones to the point that they become fragile and break easily*. After age 50, 1 in 2 women and 1 in 4 men will experience an osteoporosis related fracture in their lifetime, often leading to hip, spine, and wrist fractures (Dailey & Cravedi, 2006). Broken hips are a very serious problem as we age. They greatly increase the risk of death, especially during the year after they break (NIH Senior Health, 2015). In the U.S., more than 53 million adults either already have osteoporosis or at a high risk due to low bone mass (NIH Senior Health, 2015). *As bones weaken in the spine, adults gradually lose height and their posture becomes hunched over, which is called* **Kyphosis**. Over time a bent spine can make it hard to walk or even sit up. Adults can prevent the loss of bone mass by eating a healthy diet with enough calcium and vitamin D, regularly exercising, limiting alcohol, and not smoking (National Osteoporosis Foundation, 2016).



Figure 9.19: Elderly woman with osteoporosis.

Chronic obstructive pulmonary disease (COPD) *is a progressive lung disease in which the airways become damaged making it difficult to breathe.* COPD includes problems such as emphysema and chronic bronchitis (NIH Senior Health, 2013). COPD kills more than 120,000 people every year, making it one of the leading causes of death.

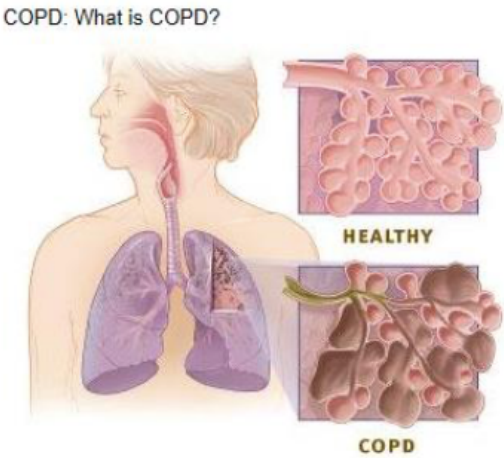


Figure 9.20: Chronic obstructive pulmonary disease (COPD).

Figure 9.20 compares healthy to damaged lungs due to COPD. As COPD develops slowly, people may not notice the early signs, and may attribute the shortness of breath to age or lack of physical exercise. Most people are not diagnosed until midlife or late adulthood. There is no cure as the damage cannot be reversed. Treatments aim at slowing further damage.

Cigarette smoking is the leading cause of COPD, but other types of tobacco smoking, such as a pipe or cigar, can cause COPD, especially if the smoke is inhaled. Heavy or long-term exposure to second hand smoke can also lead to COPD (NIH Senior Health, 2013). COPD can also occur in people who have long term exposure to other environmental irritants, such as chemical fumes, and dust from the environment and workplace.

About 1 in every 1,600 to 5,000 people have a risk for COPD because of a recessive genetic condition known as alpha-1 antitrypsin (AAT) deficiency (NIH, 2011). AAT is a protein made in

the liver that protects organs, especially the lungs, from the effects of other harmful proteins. In those with the genetic defect, the AAT protein created is the wrong shape and cannot leave the liver. This can lead to a heightened risk for lung disease, and even liver disease, as the excess of the AAT protein can lead to **cirrhosis**, *which is a disease in which the liver becomes scarred and does not function properly*. While some people with ATT deficiency are not affected and live a normal life, COPD is more likely to occur in such individuals if their lungs are exposed to environmental irritants.

Shingles: According to the National Institute on Aging (2015e), **shingles** *is a disease that affects your nerves.* Shingles is caused by the same virus as chicken pox, the varicella-zoster virus (VZV). After you recover from chickenpox, the virus continues to live in some of your nerve cells. It is usually inactive, and most adults live with VZV in their body and never get shingles. However, the virus will become active in one in three adults. Instead of causing chickenpox again, it produces shingles. A *risk factor for shingles includes advanced age as people have a* harder time fighting off infections as they get older. About half of all shingles cases are in adults age 60 or older, and the chance of getting shingles becomes much greater by age 70. Other factors that weaken an individual's ability to fight infections, such as cancer, HIV infections, or other medical conditions, can put one at a greater risk for developing shingles.



Figure 9.21: Shingles rash.

Shingles results in pain, burning, tingling, or itching in the affected area, as well as a rash and blisters. Typically, shingles develops only on one side of the body or face and in a small area rather than all over. Most cases of shingles last 3 to 5 weeks. After the shingles rash goes away, some people may be left with ongoing pain, called post-herpetic neuralgia (PHN) in the area where the rash had been (NIA, 2015e). The older one is when getting shingles, the greater the chance of developing PHN. Some people with PHN find it hard to go about their daily activities, like dressing, cooking, and eating. They can also suffer from depression, anxiety and sleeplessness. Medicines can help with pain and usually PHN will disappear. Unfortunately, the blisters from shingles may become infected or leave a scar. Blisters near or in the eye can cause lasting eye damage or blindness. A brief paralysis of the face, hearing loss, and very rarely, swelling of the brain (encephalitis) can also occur. There is a shingles vaccine recommended for those aged 60 and older. Shingles is not contagious, but one can catch chickenpox from someone with shingles.

9.8: Brain Functioning

Research has demonstrated that the brain loses 5% to 10% of its weight between 20 and 90 years of age (Fjell & Walhovd, 2010). This decrease in brain volume appears to be due to the shrinkage of neurons, lower number of synapses, and shorter length of axons. According to Garrett (2015), the normal decline in cognitive ability throughout the lifespan has been associated with brain changes, including reduced activity of genes involved in memory storage, synaptic pruning, plasticity, and glutamate and GABA (neurotransmitters) receptors. There is also a loss in white matter connections between brain areas. Without myelin, neurons demonstrate slower conduction and impede each other's actions. A loss of synapses occurs in specific brain areas, including the hippocampus (involved in memory) and the basal forebrain region. Older individuals also activate larger regions of their attentional and executive networks, located in the parietal and prefrontal cortex, when they perform complex tasks. This increased activation correlates with a reduced performance on both executive tasks and tests of working memory when compared to those younger (Kolb & Whishaw, 2011).

Despite these changes the brain exhibits considerable plasticity, and through practice and training, the brain can be modified to compensate for age-related changes (Erber & Szuchman, 2015). Park and Reuter-Lorenz (2009) proposed the **Scaffolding Theory of Aging and Cognition** *which states that the brain adapts to neural atrophy (dying of brain cells) by building alternative connections, referred to as scaffolding.* This scaffolding allows older brains to retain high levels of performance. Brain compensation is especially noted in the additional neural effort demonstrated by those individuals who are aging well. For example, older adults who performed just as well as younger adults on a memory task used both prefrontal areas, while only the right prefrontal cortex was

used in younger participants (Cabeza, Anderson, Locantore, & McIntosh, 2002). Consequently, this decrease in brain lateralization appears to assist older adults with their cognitive skills.



Figure 9.22: Exercise is important to brain functioning.

Can we improve brain functioning? Many training programs have been created to improve brain functioning. ACTIVE (Advanced Cognitive Training for Independent and Vital Elderly), a study conducted between 1999 and 2001 in which 2,802 individuals age 65 to 94, suggests that the answer is "yes". These racially diverse participants received 10 group training sessions and 4 follow up sessions to work on tasks of memory, reasoning, and speed of processing. These mental workouts improved cognitive functioning even 5 years later. Many of the participants believed that this improvement could be seen in everyday tasks as well (Tennstedt et al., 2006). However, programs for the elderly on memory, reading, and processing speed training demonstrate that there is improvement on the specific tasks trained, but there is no generalization to other abilities (Jarrett, 2015). Further, these

programs have not been shown to delay or slow the progression of Alzheimer's disease. Although these programs are not harmful, "physical exercise, learning new skills, and socializing remain the most effective ways to train your brain" (p. 207). These activities appear to build a reserve to minimize the effects of primary aging of the brain.

Parkinson's disease *is characterized by motor tremors, loss of balance, poor coordination, rigidity, and difficulty moving* (Garrett, 2015). Parkinson's affects approximately 1% of those over the age of 60, and it appears more frequently in family members in a little less than 10% of cases. Twenty-eight chromosomal areas have been implicated in Parkinson's disease, but environmental factors have also been identified and include brain injury. Being knocked unconscious once increases the risk by 32%, and being knocked out several times increases the risk by 174% (Garrett, 2015). Other environmental influences include toxins, industrial chemicals, carbon monoxide, herbicides and pesticides (Olanow & Tatton, 1999). The symptoms are due to the deterioration of the substantia nigra, an area in the midbrain whose neurons send dopamine-releasing axons to the basal ganglia which affects motor activity.

Treatment typically includes the medication levodopa (L-dopa), which crosses the blood-brain barrier and is converted into dopamine in the brain. Deep brain stimulation, which involves inserting an electrode into the brain that provides electrical stimulation, has resulted in improved motor functioning (Garrett, 2015).

Sleep: Similar to other adults, older adults need between 7 to 9 hours of sleep per night, *but they tend to go to sleep earlier and get up earlier than those younger. This pattern is called* **advanced sleep phase syndrome** and is based on changes in circadian rhythms (National Sleep Foundation, 2009).There are sleep problems in older adults, and insomnia is the most common problem in those 60 and older (NIA, 2016). People with **insomnia** *have trouble falling asleep and staying asleep*. There are many reasons why older people may have insomnia, including certain medications, being in pain, having

a medical or psychiatric condition, and even worrying before bedtime about not being able to sleep. Using over the counter sleep aids or medication may only work when used for a short time. Consequently, sleep problems should be discussed with a health care professional.

Also, common in older adults are sleep disorders, including sleep apnea, restless legs syndrome, periodic limb movement disorder, and rapid eye movement sleep behavior disorder (NIA, 2016). **Sleep apnea** *refers to repeated short pauses in breathing, while an individual sleeps, that can lead to reduced oxygen in the blood.* Snoring is a common symptom of sleep apnea and it often worsens with age. Untreated sleep apnea can lead to impaired daytime functioning, high blood pressure, headaches, stroke, and memory loss. **Restless legs syndrome** *feels like there is tingling, crawling, or pins and needles in one or both legs, and this feeling is worse at night.* **Periodic limb movement disorder** *causes people to jerk and kick their legs every 20 to 40 seconds during sleep.* **Rapid eye movement sleep behavior disorder** *occurs when one's muscles can move during REM sleep and sleep is disrupted.*

According to the National Sleep Foundation (2009), there are many medical conditions that affect sleep and include gastroesophageal reflux disease, diabetes mellitus, renal failure, respiratory diseases such as asthma, and immune disorders. Diseases such as Parkinson's disease and multiple sclerosis also commonly cause problems sleeping. Lastly, Alzheimer's disease can interfere with sleeping patterns. Individuals may wake up many times during the night, wander when up, and yell which can alter the amount of time they sleep. Both minor and significant sleep problems in older adults can lead to increased risk of accidents, falls, chronic fatigue, decreased quality of life, cognitive decline, reduced immune function, and depression (Buman, 2013).

Because of sleep problems experienced by those in late adulthood, research has looked into whether exercise can improve their quality of sleep. Results show that 150 minutes per week of exercise can improve sleep quality (Buman, 2013). This amount of

exercise is also recommended to improve other health areas including lowering the risk for heart disease, diabetes, and some cancers. Aerobic activity, weight training, and balance programs are all recommended. For those who live in assisted living facilities even light exercise, such as stretching and short walks, can improve sleep. High intensity activity is not necessary to see improvements. Overall, the effects of exercise on sleep may actually be even larger for older adults since their sleep quality may not be ideal to start.



Figure 9.23: Exercise improves sleep.

9.9: Sexuality

According to Kane (2008), older men and women are often viewed as genderless and asexual. There is a stereotype that elderly individuals no longer engage in sexual activity and when they do, they are perceived to have committed some kind of offense. These ageist myths can become internalized, and older people have a more difficult time accepting their sexuality (Gosney, 2011). Additionally, some older women indicate that they no longer worry about sexual concerns anymore once they are past the child bearing years.



Figure 9.24: Elderly couple.

In reality, many older couples find greater satisfaction in their sex life than they did when they were younger. They have fewer distractions, more time and privacy, no worries about getting pregnant, and greater intimacy with a lifelong partner (NIA, 2013). Results from the National Social Life Health, and Aging Project indicated that 72% of men and 45.5% of women aged 52 to 72

reported being sexually active (Karraker, DeLamater, & Schwarz, 2011). Additionally, the National Survey of Sexual Health data indicated that 20%-30% of individuals remain sexually active well into their 80s (Schick et al., 2010). However, there are issues that occur in older adults that can adversely affect their enjoyment of healthy sexual relationships.

Causes of Sexual Problems

According to the National Institute on Aging (2013), chronic illnesses including arthritis (joint pain), diabetes (erectile dysfunction), heart disease (difficulty achieving orgasm for both sexes), stroke (paralysis), and dementia (inappropriate sexual behavior) can all adversely affect sexual functioning. Hormonal changes, physical disabilities, surgeries, and medicines can also affect a senior's ability to participate in and enjoy sex. How one feels about sex can also affect performance. For example, a woman who is unhappy about her appearance as she ages may think her partner will no longer find her attractive. A focus on youthful physical beauty for women may get in the way of her enjoyment of sex. Likewise, most men have a problem with erectile dysfunction (ED) once in a while, and some may fear that ED will become a more common problem as they age. If there is a decline in sexual activity for a heterosexual couple, it is typically due to a decline in the male's physical health (Erber & Szuchman, 2015).

Overall, the best way to experience a healthy sex life in later life is to keep sexually active while aging. However, the lack of an available partner can affect heterosexual women's participation in a sexual relationship. Beginning at age 40 there are more women than men in the population, and the ratio becomes 2 to 1 at age 85 (Karraker et al., 2011). Because older men tend to pair with younger women when they become widowed or divorced, this also decreases the pool of available men for older women (Erber & Szuchman, 2015). In

fact, a change in marital status does not result in a decline in the sexual behavior of men aged 57 to 85 years-old, but it does result in a decline for similar aged women (Karraker et al., 2011

Concluding Thoughts

Key players in improving the quality of life among older adults will be those adults themselves. 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.

9.10: Cognitive Development in Late Adulthood

Learning Objectives: Cognitive Development in Late Adulthood

- Describe how memory changes for those in late adulthood
- Describe the theories for why memory changes occur
- Describe how cognitive losses in late adulthood are exaggerated
- Explain the pragmatics and mechanics of intelligence
- Define what is a neurocognitive disorder
- Explain Alzheimer's disease and other neurocognitive disorders
- Describe work and retirement in late adulthood
- Explain how those in late adulthood use strategies to compensate for losses

How Does Aging Affect Information Processing?

There are numerous stereotypes regarding older adults as being forgetful and confused, but what does the research on memory and cognition in late adulthood reveal? Memory comes in many types, such as working, episodic, semantic, implicit, and prospective. There are also many processes involved in memory, thus it should not be a surprise that there are declines in some types of memory and memory processes, while other areas of memory are maintained or even show some improvement with age. In this section, we will focus on changes in memory, attention, problem solving, intelligence, and wisdom, including the exaggeration of losses stereotyped in the elderly.

Memory

Changes in Working Memory: As discussed in chapter 4, working memory is the more active, effortful part of our memory system. Working memory is composed of three major systems: The **phonological loop** *that maintains information about auditory stimuli*, the **visuospatial sketchpad**, *that maintains information about visual stimuli*, and the **central executive,** *that oversees working memory, allocating resources where needed and monitoring whether cognitive strategies are being effective* (Schwartz, 2011). Schwartz reports that it is the central executive that is most negatively impacted by age. In tasks that require allocation of attention between different stimuli, older adults fair worse than do younger adults. In a study by Göthe, Oberauer, and Kliegl (2007) older and younger adults were asked to learn two tasks simultaneously. Young adults eventually managed to learn and perform each task without any loss in speed and efficiency, although it did take considerable practice. None of the older adults were able to achieve this. Yet, older adults could perform at young adult levels if they had been asked to learn each task individually. Having older adults learn and perform both tasks together was too taxing for the central executive. In contrast, working memory tasks that do not require much input from the central executive, such as the digit span test, which uses predominantly the phonological loop, we find that older adults perform on par with young adults (Dixon & Cohen, 2003).



Figure 9.24: Older adults experience changes in memory.

Changes in Long-term Memory: As you should recall, long-term memory is divided into semantic (knowledge of facts), episodic (events), and implicit (procedural skills, classical conditioning and priming) memories. Semantic and episodic memory are part of the explicit memory system, which requires conscious effort to create and retrieve. Several studies consistently reveal that episodic memory shows greater age-related declines than semantic memory (Schwartz, 2011; Spaniol, Madden, & Voss, 2006). It has been suggested that episodic memories may be harder to encode and retrieve because they contain at least two different types of memory, the event and when and where the event took place. In contrast, semantic memories are not tied to any particular time line. Thus, only the knowledge needs to be encoded or retrieved (Schwartz, 2011). Spaniol et al. (2006) found that retrieval of semantic information was considerably faster for both younger and older adults than the retrieval of episodic information, with there being little difference between the two age groups for semantic memory retrieval. They note that older adults' poorer performance on episodic memory appeared to be related to slower processing of the information and the difficulty of the task. They found that as the task became increasingly difficult, the gap between each age

groups' performance increased for episodic memory more so than for semantic memory.

Studies which test general knowledge (semantic memory), such as politics and history (Dixon, Rust, Feltmate, & See, 2007), or vocabulary/lexical memory (Dahlgren, 1998) often find that older adults outperform younger adults. However, older adults do find that they experience more *"blocks" at retrieving information that they know*. In other words, they experience more **tip-of-the-tongue (TOT)** events than do younger adults (Schwartz, 2011).

Implicit memory requires little conscious effort and often involves skills or more habitual patterns of behavior. This type of memory shows few declines with age. Many studies assessing implicit memory measure the effects of priming. **Priming** *refers to changes in behavior as a result of frequent or recent experiences*. If you were shown pictures of food and asked to rate their appearance and then later were asked to complete words such as s_ _ p, you may be more likely to write soup than soap, or ship. The images of food "primed" your memory for words connected to food. Does this type of memory and learning change with age? The answer is typically "no" for most older adults (Schacter, Church, & Osowiecki, 1994).

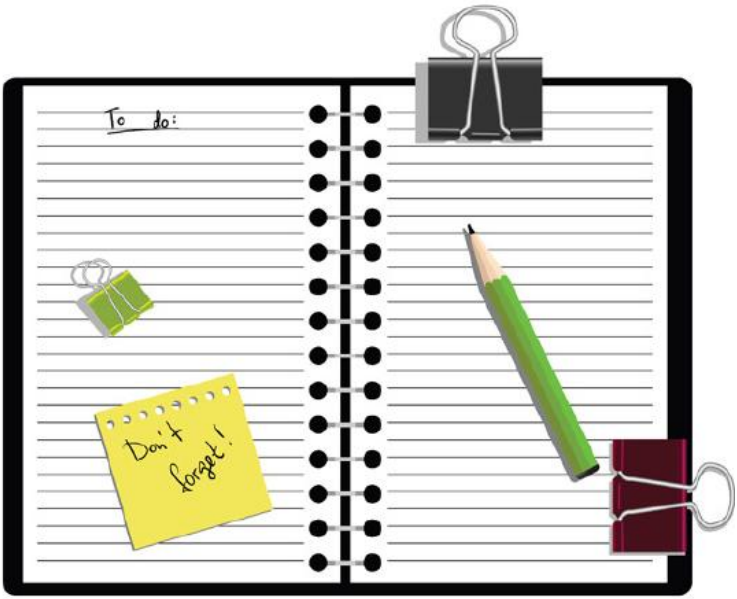


Figure 9.25: Aids for prospective memory.

Prospective memory *refers to remembering things we need to do in the future*, such as remembering a doctor's appointment next week, or to take medication before bedtime. It has been described as "the flip-side of episodic memory" (Schwartz, 2011, p. 119). Episodic memories are the recall of events in our past, while the focus of prospective memories is of events in our future. In general, humans are fairly good at prospective
memory if they have little else to do in the meantime. However, when there are competing tasks that are also demanding our attention, this type of memory rapidly declines. The explanation given for this is that this form of memory draws on the central executive of working memory, and when this component of working memory is absorbed in other tasks, our ability to remember to do something else in the future is more likely to slip out of memory (Schwartz, 2011). However, prospective memories are often divided into **time-based prospective memories**, *such as having to remember*

to do something at a future time, or **event-based prospective memories**, *such as having to remember to do something when a certain event occurs*. When age-related declines are found, they are more likely to be time-based, than event-based, and in laboratory settings rather than in the real-world, where older adults can show comparable or slightly better prospective memory performance (Henry, MacLeod, Phillips & Crawford, 2004; Luo & Craik, 2008). This should not be surprising given the tendency of older adults to be more selective in where they place their physical, mental, and social energy. Having to remember a doctor's appointment is of greater concern than remembering to hit the space-bar on a computer every time the word "tiger" is displayed.

Recall versus Recognition: Memory performance often depends on whether older adults are asked to simply recognize previously learned material or recall material on their own. Generally, for all humans, recognition tasks are easier because they require less cognitive energy. Older adults show roughly equivalent memory to young adults when assessed with a recognition task (Rhodes, Castel, & Jacoby, 2008). With recall measures, older adults show memory deficits in comparison to younger adults. While the effect is initially not that large, starting at age 40 adults begin to show declines in recall memory compared to younger adults (Schwartz, 2011).



Figure 9.26: The age advantage.

The Age Advantage: 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 quite well. 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 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).

9.11: Attention and Problem Solving

Changes in Attention in Late Adulthood: Changes in sensory functioning and speed of processing information in late adulthood often translates into changes in attention (Jefferies et al., 2015). Research has shown that older adults are less able to selectively focus on information while ignoring distractors (Jefferies et al., 2015; Wascher, Schneider, Hoffman, Beste, & Sänger, 2012), although Jefferies and her colleagues found that when given double time, older adults could perform at young adult levels. Other studies have also found that older adults have greater difficulty shifting their attention between objects or locations (Tales, Muir, Bayer, & Snowden, 2002). Consider the implication of these attentional changes for older adults.

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). In contrast, 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.

Problem Solving: Problem solving tasks that require processing non-meaningful information quickly (a kind of task that might be part of a laboratory experiment on mental processes) declines with

age. However, many real-life challenges facing older adults do not rely on speed of processing or making choices on one's own. Older adults resolve everyday problems by relying on input from others, such as family and friends. They are also less likely than younger adults to delay making decisions on important matters, such as medical care (Strough, Hicks, Swenson, Cheng & Barnes, 2003; Meegan & Berg, 2002).

What might explain these deficits as we age? The **processing speed theory**, proposed by Salthouse (1996, 2004), *suggests that as the nervous system slows with advanced age our ability to process information declines*. This slowing of processing speed may explain age differences on many different cognitive tasks. For instance, as we age, working memory becomes less efficient (Craik & Bialystok, 2006). Older adults also need longer time to complete mental tasks or make decisions. Yet, when given sufficient time older adults perform as competently as do young adults (Salthouse, 1996). Thus, when speed is not imperative to the task healthy older adults do not show cognitive declines.

In contrast, **inhibition theory** *argues that older adults have difficulty with inhibitory functioning, or the ability to focus on certain information while suppressing attention to less pertinent information tasks* (Hasher & Zacks, 1988). Evidence comes from directed forgetting research. In **directed forgetting** *people are asked to forget or ignore some information, but not other information.* For example, you might be asked to memorize a list of words, but are then told that the researcher made a mistake and gave you the wrong list, and asks you to "forget" this list. You are then given a second list to memorize. While most people do well at forgetting the first list, older adults are more likely to recall more words from the "forget-to-recall" list than are younger adults (Andrés, Van der Linden, & Parmentier, 2004).



Figure 9.27: Cognitive losses in late adulthood has been exaggerated.

Cognitive losses exaggerated: While there are information processing losses in late adulthood, overall loss has been exaggerated (Garrett, 2015). One explanation is that the type of tasks that people are tested on tend to be meaningless. For example, older individuals are not motivated to remember a random list of words in a study, but they are motivated for more meaningful material related to their life, and consequently perform better on those tests. Another reason is that the research is often cross-sectional. When age comparisons occur longitudinally, however, the amount of loss diminishes (Schaie, 1994). A third reason is that the loss may be due to a lack of opportunity in using various skills. When older adults practiced skills, they performed as well as they had previously. Although diminished performance speed is especially noteworthy in the elderly, Schaie (1994) found that statistically removing the effects of speed diminished the individual's performance declines significantly. In fact, Salthouse and Babcock (1991) demonstrated that processing speed accounted for all but 1% of age-related differences in working memory when testing individuals from 18 to 82. Finally, it is well established that our hearing and vision decline

as we age. Longitudinal research has proposed that deficits in sensory functioning explain age differences in a variety of cognitive abilities (Baltes & Lindenberger, 1997).

9.12: Intelligence and Wisdom

When looking at scores on traditional intelligence tests, tasks measuring verbal skills show minimal or no age-related declines, while scores on performance tests, which measure solving problems quickly, decline with age (Botwinick, 1984). This profile mirrors crystalized and fluid intelligence. As you recall from last chapter, crystallized intelligence encompasses abilities that draw upon experience and knowledge. Measures of crystallized intelligence include vocabulary tests, solving number problems, and understanding texts. Fluid intelligence refers to information processing abilities, such as logical reasoning, remembering lists, spatial ability, and reaction time. Baltes (1993) introduced two additional types of intelligence to reflect cognitive changes in aging. **Pragmatics of intelligence** *are cultural exposure to facts and procedures that are maintained as one ages and are similar to crystalized intelligence.* **Mechanics of intelligence** *are dependent on brain functioning and decline with age, similar to fluid intelligence.* Baltes indicated that pragmatics of intelligence show little decline and typically increase with age. Additionally, pragmatics of intelligence may compensate for the declines that occur with mechanics of intelligence. In summary, global cognitive declines are not typical as one ages, and individuals compensate for some cognitive declines, especially processing speed.

Wisdom *is the ability to use the accumulated knowledge about practical matters that allows for sound judgment and decision making*. A wise person is insightful and has knowledge that can be used to overcome obstacles in living. Does aging bring wisdom? While living longer brings experience, it does not always bring wisdom. Paul Baltes and his colleagues (Baltes & Kunzmann, 2004; Baltes & Staudinger, 2000) suggest that wisdom is rare. In addition, the emergence of wisdom can be seen in late adolescence and young adulthood, with there being few gains in wisdom over the

course of adulthood (Staudinger & Gluck, 2011). This would suggest that factors other than age are stronger determinants of wisdom. Occupations and experiences that emphasize others rather than self, along with personality characteristics, such as openness to experience and generativity, are more likely to provide the building blocks of wisdom (Baltes & Kunzmann, 2004). Age combined with a certain types of experience and/or personality brings wisdom.

9.13: Neurocognitive Disorders

Historically, the term dementia was used to refer to an individual experiencing difficulties with memory, language, abstract thinking, reasoning, decision making, and problem-solving (Erber & Szuchman (2015). However, in the latest edition of the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5) (American Psychiatric Association, 2013) the term dementia has been replaced by neurocognitive disorder. A **Major Neurocognitive Disorder** *is diagnosed as a significant cognitive decline from a previous level of performance in one or more cognitive domains and interferes with independent functioning*, while a **Minor Neurocognitive Disorder** *is diagnosed as a modest cognitive decline from a previous level of performance in one of more cognitive domains and does not interfere with independent functioning.* There are several different neurocognitive disorders that are typically demonstrated in late adulthood, and determining the exact type can be difficult because the symptoms may overlap with each other. Diagnosis often includes a medical history, physical exam, laboratory tests, and changes noted in behavior. Alzheimer's disease, Vascular Neurocognitive Disorder and Neurocognitive Disorder with Lewy bodies will be discussed below.

Alzheimer's disease: Probably the most well-known and most common neurocognitive disorder for older individuals is Alzheimer's disease. In 2016 an estimated 5.4 million Americans were diagnosed with Alzheimer's disease (Alzheimer's Association, 2016), which was approximately one in nine aged 65 and over. By 2050 the number of people age 65 and older with Alzheimer's disease is projected to be 13.8 million if there are no medical breakthroughs to prevent or cure the disease. Alzheimer's disease is the 6th leading cause of death in the United States, but the 5th

leading cause for those 65 and older. Among the top 10 causes of death in America, Alzheimer's disease is the only one that cannot be prevented, cured, or even slowed. Current estimates indicate that Alzheimer disease affects approximately 50% of those identified with a neurocognitive disorder (Cohen & Eisdorfer, 2011).

Alzheimer's disease has a gradual onset with subtle personality changes and memory loss that differs from normal age-related memory problems occurring first. Confusion, difficulty with change, and deterioration in language, problem-solving skills, and personality become evident next. In the later stages, the individual loses physical coordination and is unable to complete everyday tasks, including self-care and personal hygiene (Erber & Szuchman, 2015). Lastly, individuals lose the ability to respond to their environment, to carry on a conversation, and eventually to control movement (Alzheimer's Association, 2016). On average people with Alzheimer's survive eight years, but some may live up to 20 years. The disease course often depends on the individual's age and whether they have other health conditions.

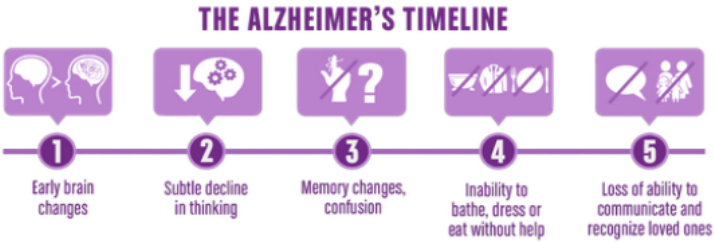


Figure 9.28: The Alzheimer's timeline.

The greatest risk factor for Alzheimer's disease is age, but there are genetic and environmental factors that can also contribute. Some forms of Alzheimer's are hereditary, and with the early onset type, several rare genes have been identified that directly cause Alzheimer's. People who inherit these genes tend to develop symptoms in their 30s, 40s and 50s. Five percent of those identified with Alzheimer's disease are younger than age 65. When Alzheimer's disease is caused by deterministic genes, it is called familial

Alzheimer's disease (Alzheimer's Association, 2016). Traumatic brain injury is also a risk factor, as well as obesity, hypertension, high cholesterol, and diabetes (Carlson, 2011).

According to Erber and Szuchman (2015) the problems that occur with Alzheimer's disease are due to the "death of neurons, the breakdown of connections between them, and the extensive formation of plaques and tau, which interfere with neuron functioning and neuron survival" (p. 50). Plaques are abnormal formations of protein pieces called beta-amyloid. Beta-amyloid comes from a larger protein found in the fatty membrane surrounding nerve cells. Because beta-amyloid is sticky, it builds up into plaques (Alzheimer's Association, 2016). These plaques appear to block cell communication and may also trigger an inflammatory response in the immune system, which leads to further neuronal death.

Tau is an important protein that helps maintain the brain's transport system. When tau malfunctions, it changes into twisted strands called tangles that disrupt the transport system. Consequently, nutrients and other supplies cannot move through the cells and they eventually die. The death of neurons lead to the brain shrinking and affecting all aspects of brain functioning. For example, the hippocampus is involved in learning and memory, and the brain cells in this region are often the first to be damaged. This is why memory loss is often one of the earliest symptoms of Alzheimer's disease. Figures 9.29 and 9.30 illustrate the difference between an Alzheimer's brain and a healthy brain.



Figures 9.29 and 9.30: Healthy brain versus severe AD.

Vascular Neurocognitive Disorder is the second most common neurocognitive disorder affecting 0.2% in the 65-70 years age group and 16% of individuals 80 years and older (American Psychiatric Association, 2013). Vascular neurocognitive disorder is associated with a blockage of cerebral blood vessels that affects one part of the brain rather than a general loss of brain cells seen with Alzheimer's disease. Personality is not as affected in vascular neurocognitive disorder, and more males are diagnosed than females (Erber and Szuchman, 2015). It also comes on more abruptly than Alzheimer's disease and has a shorter course before death. Risk factors include smoking, diabetes, heart disease, hypertension, or a history of strokes.

Neurocognitive Disorder with Lewy bodies: According to the National Institute on Aging (2015a), Lewy bodies are microscopic protein deposits found in neurons seen postmortem. They affect chemicals in the brain that can lead to difficulties in thinking, movement, behavior and mood. Neurocognitive Disorder with Lewy bodies is the third most common form and affects more than 1 million Americans. It typically begins at age 50 or older, and appears

to affect slightly more men than women. The disease lasts approximately 5 to 7 years from the time of diagnosis to death, but can range from 2 to 20 years depending on the individual's age, health, and severity of symptoms. Lewy bodies can occur in both the cortex and brain stem which results in cognitive as well as motor symptoms (Erber & Szuchman, 2015). The movement symptoms are similar to those with Parkinson's disease and include tremors and muscle rigidity. However, the motor disturbances occur at the same time as the cognitive symptoms, unlike with Parkinson's disease when the cognitive symptoms occur well after the motor symptoms. Individuals diagnosed with Neurocognitive Disorder with Lewy bodies also experience sleep disturbances, recurrent visual hallucinations, and are at risk for falling.

9.14: Work and Retirement

Older adults are just as capable as younger adults at the workplace. In fact, jobs that require social skills, accumulated knowledge, and relevant experiences favor older adults (Erber & Szuchman, 2015). Older adults also demonstrate lower rates of absenteeism and greater investment in their work. In 2015, 8.8 million adults aged 65 or older were employed or actively seeking employment. This constitute about 5.6% of the U.S. labor force (AOA, 2016).

Transitioning into Retirement: For most Americans, retirement is a process and not a one-time event (Quinn & Cahill, 2016). Sixty percent of workers transition straight to bridge jobs, which are often part-time, and occur between a career and full retirement. About 15% of workers get another job after being fully retired. This may be due to not having adequate finances after retirement or not enjoying their retirement. Some of these jobs may be in **encore careers**, or *work in a different field from the one in which they retired.* Approximately 10% of workers begin phasing into retirement by reducing their hours. However, not all employers will allow this due to pension regulations.

Retirement age changes: Looking at retirement data, the average age of retirement declined from more than 70 in 1910 to age 63 in the early 1980s. However, this trend has reversed and the current average age is now 65. Additionally, 18.5% of those over the age of 65 continue to work (US Department of Health and Human Services, 2012) compared with only 12% in 1990 (U. S. Government Accountability Office, 2011). With individuals living longer, once retired the average amount of time a retired worker collects social security is approximately 17-18 years (James, Matz-Costa, & Smyer, 2016).

When to retire: Laws often influence when someone decides to retire. In 1986 the Age Discrimination in Employment Act (ADEA) was amended, and mandatory retirement was eliminated for most

workers (Erber & Szuchman, 2015). Pilots, air traffic controllers, federal law enforcement, national park rangers, and fire fighters continue to have enforced retirement ages. Consequently, for most workers they can continue to work if they choose and are able. Social security benefits also play a role. For those born before 1938, they can receive full social security benefits at age 65. For those born between 1943 and 1954, they must wait until age 66 for full benefits, and for those born after 1959 they must wait until age 67 (Social Security Administration, 2016). Extra months are added to those born in years between. For example, if born in 1957, the person must wait until 66 years and 6 months. The longer one waits to receive social security, the more money will be paid out. Those retiring at age 62, will only receive 75% of their monthly benefits. Medicare health insurance is another entitlement that is not available until one is aged 65.



Figure 9.31: Retirement savings.

Delayed Retirement: Older adults primarily choose to delay retirement due to economic reasons (Erber & Szchman, 2015). Financially, continuing to work provides not only added income, but also does not dip into retirement savings which may not be sufficient. Historically, there have been three parts to retirement income; that is, social security, a pension plan, and individual savings (Quinn & Cahill, 2016). With the 2008 recession, pension plans lost value for most workers. Consequently, many older workers have had to work later in life to compensate for absent or minimal pension plans and personal savings. Social security was never intended to replace full income, and the benefits provided may not cover all the expenses, so elders continue to work. Unfortunately, many older individuals are unable to secure later employment, and those especially vulnerable include persons with disabilities, single women, the oldest- old, and individuals with intermittent work histories.

Some older adults delay retirement for psychological reasons, such as health benefits and social contacts. Recent research indicates that delaying retirement has been associated with helping one live longer. When looking at both healthy and unhealthy retirees, a one-year delay in retiring was associated with a decreased risk of death from all causes (Wu, Odden, Fisher, & Stawski, 2016). When individuals are forced to retire due to health concerns or downsizing, they are more likely to have negative physical and psychological consequences (Erber & Szuchman, 2015).

Retirement Stages: Atchley (1994) identified several phases that individuals ago through when they retire:

- **Remote pre-retirement phase** *includes fantasizing about what one wants to do in retirement*
- **Immediate pre-retirement phase** *when concrete plans are established*
- **Actual retirement**

- **Honeymoon phase** *when retirees travel and participate in activities they could not do while working*
- **Disenchantment phase** *when retirees experience an emotional let-down*
- **Reorientation phase** *when the retirees attempt to adjust to retirement by making less hectic plans and getting into a regular routine*

Not everyone goes through every stage, but this model demonstrates that retirement is a process.



Figure 9.32: Post-retirement.

Post-retirement: Those who look most forward to retirement and have plans are those who anticipate adequate income (Erber & Szuchman, 2015). This is especially true for males who have worked consistently and have a pension and/or adequate savings. Once retired, staying active and socially engaged is important.

Volunteering, caregiving and informal helping can keep seniors engaged. Kaskie, Imhof, Cavanaugh and Culp (2008) found that 70% of retirees who are not involved in productive activities spent most of their time watching TV, which is correlated with negative affect. In contrast, being productive improves well-being.

Elder Education: Attending college is not just for the young as discussed in the previous chapter. There are many reasons why someone in late adulthood chooses to attend college. PNC Financial Services surveyed retirees aged 70 and over, and found that 58% indicated that they had retired before they had planned (Holland, 2014). Many of these individuals chose to pursue additional training to improve skills to return to work in a second career. Others may be looking to take their career in a new direction. For some older students who are no longer focused on financial reasons, returning to school is intended to enable them to pursue work that is personally fulfilling. Attending college in late adulthood is also a great way for seniors to stay young and keep their minds sharp.

Even if an elder chooses not to attend college for a degree, there are many continuing education programs on topics of interest available. In 1975, a nonprofit educational travel organization called Elderhostel began in New Hampshire with five programs for several hundred retired participants (DiGiacomo, 2015). This program combined college classroom time with travel tours and experimental learning techniques. In 2010, the organization changed its name to Road Scholar, and it now serves over 100,000 people per year in the U. S. and in 150 countries. Academic courses, as well as practical skills such as computer classes, foreign languages, budgeting, and holistic medicines, are among the courses offered. Older adults who have higher levels of education are more likely to take continuing education. However, offering more educational experiences to a diverse group of older adults, including those who are institutionalized in nursing homes, can bring enhance the quality of life.

9.15: Psychosocial Development in Late Adulthood

Learning Objectives: Psychosocial Development in Late Adulthood

- Explain the stereotypes of those in late adulthood and how it impacts their lives
- Summarize Erikson's eighth psychosocial task of integrity vs despair
- Explain how self-concept and self-esteem affect those in late adulthood
- Identify sources of despair and regret
- Describe paths to integrity, including the activity, socioemotional selectivity, and convoy theories
- Describe the continuation of generativity in late adulthood
- Describe the relationships those in late adulthood have with their children and other family members
- Describe singlehood, marriage, widowhood, divorce, and remarriage in late adulthood
- Describe the different types of residential living in late adulthood
- Describe friendships in late life
- Explain concerns experienced by those in late adulthood, such as abuse and mental health issues

Ageism

Stereotypes of people in late adulthood lead many to assume that aging automatically brings poor physical health and mental decline. These stereotypes are reflected in everyday conversations, the media, and even in greeting cards (Overstreet, 2006). Age is not revered in the United States, and so laughing about getting older in birthday cards is one way to get relief. The negative attitudes people have about those in late adulthood are examples of **ageism,**

or prejudice based on age. The term ageism was first used in 1969, and according to Nelson (2016), ageism remains one of the most institutionalized forms of prejudice today.



Figure 9.33: Ageism is a form of prejudice.

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.*

Being the target of stereotypes can adversely affect individuals' *performance on tasks because they worry they will confirm the 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 the aging stereotypes will exhibit worse memory performance, worse physical performance, and reduced self-efficacy (Levy, 2009).

In terms of physically taking care of themselves, those who

believe in negative stereotypes are less likely to engage in preventative health behaviors, less likely to recover from illnesses, and more likely to feel stress and anxiety, which can adversely affect immune functioning and cardiovascular health (Nelson, 2016). Additionally, individuals who attribute their health problems to their age, had a higher death rate. Similarly, doctors who believe that illnesses are just natural consequence of aging are less likely to have older adults participate in clinical trials or receive life-sustaining treatment. In contrast, those older adults who possess positive and optimistic views of aging are less likely to have physical or mental health problems and are more likely to live longer. Removing societal stereotypes about aging and helping older adults reject those notions of aging is another way to promote health and life expectancy among the elderly.

Minority status: Older minority adults accounted for approximately 21% of the U. S. population in 2012, but are expected to reach 39% of the population in 2050 (U. S. Census Bureau, 2012). Unfortunately, racism is a further concern for minority elderly already suffering from ageism. Older adults who are African American, Mexican American, and Asian American experience psychological problems that are often associated with discrimination by the White majority (Youdin, 2016). Ethnic minorities are also more likely to become sick, but less likely to receive medical intervention. Older, minority women can face *ageism, racism, and sexism, often referred to as* **triple jeopardy** (Hinze, Lin, & Andersson, 2012), which can adversely affect their life in late adulthood.

Poverty rates: According to Quinn and Cahill (2016), the poverty rate for older adults varies based on gender, marital status, race, and age. Women aged 65 or older were 70% more likely to be poor than men, and older women aged 80 and above have higher levels of poverty than those younger. Married couples are less likely to be poor than nonmarried men and women, and poverty is more prevalent among older racial minorities. In 2012 the poverty rates for White older men (5.6%) and White older women (9.6%) were

lower than for Black older men (14%), Black older women (21%), Hispanic older men (19%), and Hispanic older women (22%).

9.16: Living Arrangements

Do those in late adulthood primarily live alone? No. In 2014, of those 65 years of age and older, approximately 72% of men and 46% of women lived with their spouse (Vespa & Schondelmyer, 2015). Between 1900 and 1990 the number of older adults living alone increased, most likely due to improvements in health and longevity during this time (see Figure 9.35). Since 1990 the number of older adults living alone has declined, because of older women more likely to be living with their spouse or children (Stepler, 2016c).

Women continue to make up the majority of older adults living alone in the U.S., although that number has dropped from those living alone in 1990 (Stepler, 2016a). Older women are more likely to be unmarried, living with children, with other relatives or non-relatives. Older men are more likely to be living alone than they were in 1990, although older men are more likely to reside with their spouse. The rise in divorce among those in late adulthood, along with the drop-in remarriage rate, has resulted in slightly more older men living alone today than in the past (Stepler, 2016c).

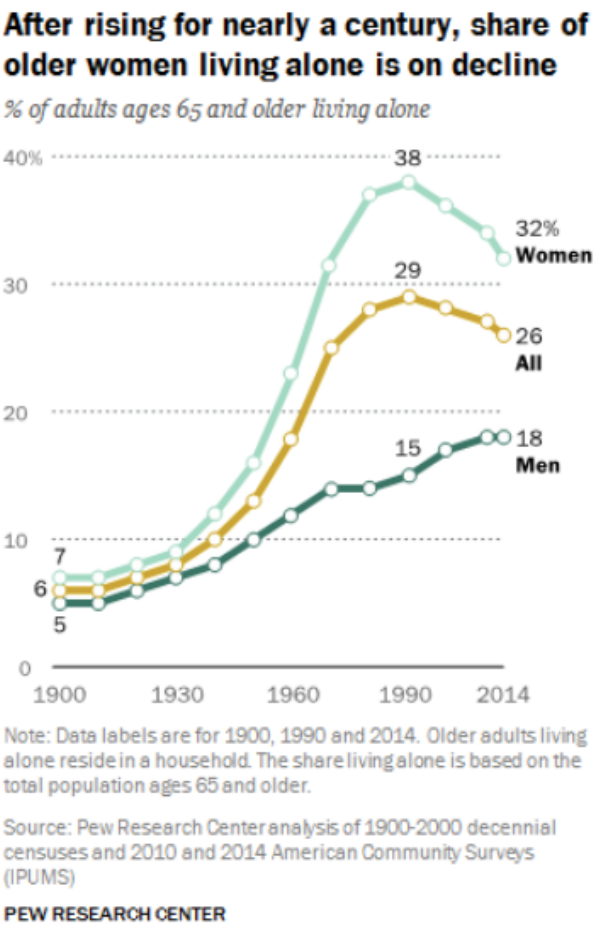


Figure 9.34: After rising for nearly a century, share of older women living alone is on decline.

Older adults who live alone report feeling more financially strapped than do those living with others (Stepler, 2016d). According to a Pew Research Center Survey, only 33% of those living alone reported they were living comfortably, while nearly 49% of those living with others said they were living comfortably. Similarly, 12% of those living alone, but only 5% of those living with others, reported that they lacked money for basic needs (Stepler, 2016d).

Do those in late adulthood primarily live with family members? No. There are significantly fewer older adults living in multigenerational housing; that is three generations living together, than in previous generations (Erber & Szuchman, 2015). According to the Pew Research Center (2011), nearly 17% of the population lived in a house with at least two adult generations based on the 2010 census results. However, ethnic differences are noted in the percentage of multigenerational households with Hispanic (22%), Black (23%), and Asian (25%) families living together in greater numbers than White families (13%). Consequently, with the exception of some cultural groups, the majority of older adults wish to live independently for as long as they are able.

Do those in late adulthood move after retirement? No. According to Erber and Szuchman (2015), the majority of those in late adulthood remain in the same location, and often in the same house, where they lived before retiring. Although some younger late adults (65-74 years) may relocate to warmer climates, once they are older (75-84 years) they often return to their home states to be closer to adult children (Stoller & Longino, 2001). Despite the previous trends, however, the recent housing crisis has kept those in late adulthood in their current suburban locations because they are unable to sell their homes (Erber & Szuchman, 2015).

Do those in late adulthood primarily live in institutions? No. Only a small portion (3.2%) of adults older than 65 lived in an institution in 2015 (United States Department of Health and Human Services, 2015). However, as individuals increase in age the percentage of those living in institutions, such as a nursing home, also increases. Specifically: 1% of those 65-74, 3% of those 75-84, and 10% of those 85 years and older lived in an institution in 2015. Due to the increasing number of baby boomers reaching late adulthood, the number of people who will depend on long-term care is expected to rise from 12 million in 2010 to 27 million in 2050 (United States Senate Commission on Long-Term Care, 2013). To meet this higher demand for services, a focus on the least restrictive care

alternatives has resulted in a shift toward home and community-based care instead of placement in a nursing home (Gatz et al., 2016).

9.17: Erikson - Integrity vs. Despair

How do people cope with old age? According to Erikson, the last psychosocial stage is **Integrity vs. Despair.** This stage includes, "*a retrospective accounting of one's life to date; how much one embraces life as having been well lived, as opposed to regretting missed opportunities*" (Erikson, 1982, p. 112). Those in late adulthood need to achieve both the acceptance of their life and the inevitability of their death (Barker, 2016). This stage includes finding meaning in one's life and accepting one's accomplishments, but also acknowledging what in life has not gone as hoped. It is also feeling a sense of contentment and accepting others' deficiencies, including those of their parents. This acceptance will lead to integrity, but if elders are unable to achieve this acceptance, they may experience despair. Bitterness and resentments in relationships and life events can lead one to despair at the end of life. According to Erikson (1982), successful completion of this stage leads to wisdom in late life.

Erikson's theory was the first to propose a lifespan approach to development, and it has encouraged the belief that older adults still have developmental needs. Prior to Erikson's theory, older adulthood was seen as a time of social and leisure restrictions and a focus primarily on physical needs (Barker, 2016). The current focus on aging well by keeping healthy and active, helps to promote integrity. There are many avenues for those in late adulthood to remain vital members of society, and they will be explored next.



Figure 9.35: Coping with old age.

Staying Active: 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* (Lemon, Bengston, & Peterson, 1972). 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. Erikson's concept of generativity applies to many older adults, just as it did in midlife.

9.18: Generativity in Late Adulthood

Research suggests that generativity is not just a concern for midlife adults, but for many elders, concerns about future generations continue into late adulthood. As previously discussed, some older adults are continuing to work beyond age 65. Additionally, they are volunteering in their community, and raising their grandchildren in greater numbers.

Volunteering

Many older adults spend time volunteering. Hooyman and Kiyak (2011) found that religious organizations are the primary settings for encouraging and providing opportunities to volunteer. Hospitals and environmental groups also provide volunteer opportunities for older adults. While volunteering peaks in middle adulthood, it continues to remain high among adults in their 60s, with about 40% engaging in volunteerism (Hooyman & Kiyak, 2011). While the number of older adults volunteering their time does decline with age, the number of hours older adults volunteer does not show much decline until they are in their late 70s (Hendricks & Cutler, 2004). African-American older adults volunteer at higher levels than other ethnic groups (Taylor, Chatters, & Leving, 2004). Taylor and colleagues attribute this to the higher involvement in religious organizations by older African-Americans.



Figure 9.36: Volunteerism in older adults.

Volunteering aids older adults as much as it does the community at large. Older adults who volunteer experience more social contact, which has been linked to higher rates of life satisfaction, and lower rates of depression and anxiety (Pilkington, Windsor, & Crisp, 2012).

Longitudinal research also finds a strong link between health in later adulthood and volunteering (Kahana, Bhatta, Lovegreen, Kahana, & Midlarsky, 2013). Lee and colleagues found that even among the oldest-old, the death rate of those who volunteer is half that of non-volunteers (Lee, Steinman, & Tan, 2011). However, older adults who volunteer may already be healthier, which is why they can volunteer compared to their less healthy age mates.

New opportunities exist for older adults to serve as virtual volunteers by dialoguing online with others from around the world and sharing their support, interests, and expertise. These volunteer opportunities range from helping teens with their writing to communicating with 'neighbors' in villages of developing countries. Virtual volunteering is available to those who cannot engage in face-to-face interactions, and it opens-up a new world of possibilities and ways to connect, maintain identity, and be productive.

Grandparents raising Grandchildren

According to the 2014 American Community Survey (U.S. Census, 2014a), over 5.5 million children under the age of 18 were living in families headed by a grandparent. This was more than a half a million increase from 2010. While most grandparents raising grandchildren are between the ages of 55 and 64, approximately 25% of grandparents raising their grandchildren are 65 and older (Office on Women's Health, 2010a).



Figure 9.37: Grandparents and grandchildren.

For many grandparents, parenting a second time can be harder. Older adults have far less energy, and often the reason why they are now acting as parents to their grandchildren is because traumatic events. A survey by AARP (Goyer, 2010) found that grandparents were raising their grandchildren because the parents had problems with drugs and alcohol, had a mental illness, were incarcerated, had divorced, had a chronic illness, were homeless, had neglected or abused the child, were deployed in the military, or had died.

While most grandparents state they gain great joy from raising their grandchildren, they also face greater financial, health, education, and housing challenges that often derail their retirement plans than do grandparents who do not have primary responsibility for raising their grandchildren.

9.19: Social Networks in Late Adulthood

A person's social network consists of the people with whom one is directly involved, such as family, friends, and acquaintances (Fischer, 1982). As individuals age, changes occur in these social networks, and The Convoy Model of Social Relations and Socioemotional Selectivity Theory address these changes (Wrzus, Hanel, Wagner, & Neyer, 2013). Both theories indicate that less close relationships will decrease as one ages, while close relationships will persist. However, the two theories differ in explaining why this occurs.

The **Convoy Model of Social Relations** *suggests that the social connections that people accumulate differ in levels of closeness and are held together by exchanges in social support* (Antonucci, 2001; Kahn & Antonucci, 1980). According to the Convoy Model, relationships with a spouse and family members, people in the innermost circle of the convoy, should remain stable throughout the lifespan. In contrast, coworkers, neighbors, and acquaintances, people in the periphery of the convoy, should be less stable. These peripheral relationships may end due to changes in jobs, social roles, location, or other life events. These relationships are more vulnerable to changing situations than family relationships. Therefore, the frequency, type, and reciprocity of the social exchanges with peripheral relationships decrease with age.

The **Socioemotional Selectivity Theory** *focuses on changes in motivation for actively seeking social contact with others* (Carstensen, 1993; Carstensen, Isaacowitz & Charles, 1999). This theory proposes that with increasing age, our motivational goals change based on how much time one has left to live. Rather than focusing on acquiring information from many diverse social relationships, as noted with adolescents and young adults, older

adults focus on the emotional aspects of relationships. To optimize the experience of positive affect, older adults actively restrict their social life to prioritize time spent with emotionally close significant others. In line with this theory, older marriages are found to be characterized by enhanced positive and reduced negative interactions and older partners show more affectionate behavior during conflict discussions than do middle-aged partners (Carstensen, Gottman, & Levenson, 1995). Research showing that older adults have smaller networks compared to young adults, and tend to avoid negative interactions, also supports this theory.



Figure 9.38: Older adults have smaller networks than young adults.

Relationship with adult children: Many older adults provide financial assistance and/or housing to adult children. There is more support going from the older parent to the younger adult children than in the other direction (Fingerman & Birditt, 2011). In addition to providing for their own children, many elders are raising their grandchildren. Consistent with socioemotional selectivity theory, older adults seek, and are helped by, their adult children providing emotional support (Lang & Schütze, 2002). Lang and Schütze, as part of the Berlin Aging Study (BASE), surveyed adult children (mean age 54) and their aging parents (mean age 84). They found that the older parents of adult children who provided emotional support,

such as showing tenderness toward their parent, cheering the parent up when he or she was sad, tended to report greater life satisfaction. In contrast, older adults whose children provided informational support, such as providing advice to the parent, reported less life satisfaction. Lang and Schütze found that older adults wanted their relationship with their children to be more emotionally meaningful. Daughters and adult children who were younger, tended to provide such support more than sons and adult children who were older. Lang and Schütze also found that adult children who were more autonomous rather than emotionally dependent on their parents, had more emotionally meaningful relationships with their parents, from both the parents' and adult children's point of view.

Friendships: Friendships are not formed in order to enhance status or careers, and may be based purely on a sense of connection or the enjoyment of being together. Most elderly people have at least one close friend. These friends may provide emotional as well as physical support. Being able to talk with friends and rely on others is very important during this stage of life. Bookwala, Marshall, and Manning (2014) found that the availability of a friend played a significant role in protecting the health from the impact of widowhood. Specifically, those who became widowed and had a friend as a confidante, reported significantly lower somatic depressive symptoms, better self-rated health, and fewer sick days in bed than those who reported not having a friend as a confidante. In contrast, having a family member as a confidante did not provide health protection for those recently widowed.

Loneliness or solitude? Loneliness is the discrepancy between the social contact a person has and the contacts a person wants (Brehm, Miller, Perlman, & Campbell, 2002). It can result from social or emotional isolation. Women tend to experience loneliness due to social isolation; men from emotional isolation. Loneliness can be accompanied by a lack of self-worth, impatience, desperation, and depression. Being alone does not always result in loneliness. For some, it means solitude. Solitude involves gaining self-awareness,

taking care of the self, being comfortable alone, and pursuing one's interests (Brehm et al., 2002).

9.20: Late Adult Lifestyles

Marriage: As can be seen in Figure 9.40, the most common living arrangement for older adults in 2015 was marriage (AOA, 2016). Although this was more common for older men.

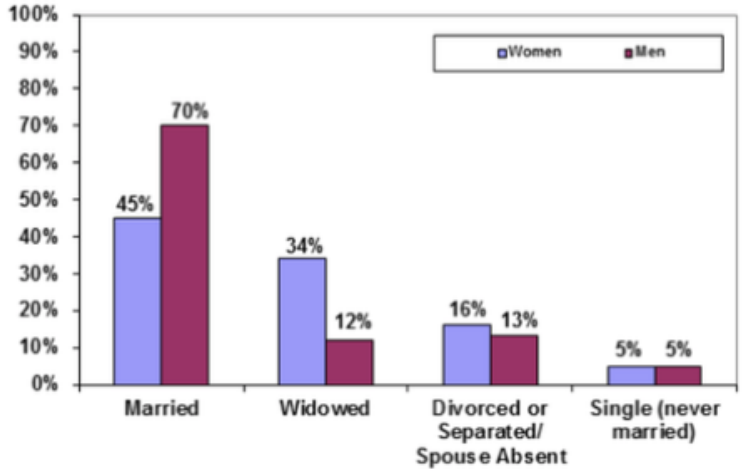


Figure 9.39: Marital status: Age 65+ in 2015.

Widowhood: Losing one's spouse is one of the most difficult transitions in life. The Social Readjustment Rating Scale, commonly known as the Holmes-Rahe Stress Inventory, rates the death of a spouse as the most significant stressor (Holmes & Rahe, 1967). The loss of a spouse after many years of marriage may make an older adult feel adrift in life. They must remake their identity after years of seeing themselves as a husband or wife. Approximately, 1 in 3 women aged 65 and older are widowed, compared with about 1 in 10 men.

Loneliness is the biggest challenge for those who have lost their spouse (Kowalski & Bondmass, 2008). However, several factors can influence how well someone adjusts to this life event. Older adults

who are more extroverted (McCrae & Costa, 1988) and have higher self-efficacy, (Carr, 2004b) often fare better. Positive support from adult children is also associated with fewer symptoms of depression and better overall adjustment in the months following widowhood (Ha, 2010).

The context of the death is also an important factor in how people may react to the death of a spouse. The stress of caring for an ill spouse can result in a mixed blessing when the ill partner dies (Erber & Szchman, 2015). The death of a spouse who died after a lengthy illness may come as a relief for the surviving spouse, who may have had the pressure of providing care for someone who was increasingly less able to care for themselves. At the same time, this sense of relief may be intermingled with guilt for feeling relief at the passing of their spouse. The emotional issues of grief are complex and will be discussed in more detail in chapter 10.

Widowhood also poses health risks. The **widowhood mortality effect** *refers to the higher risk of death after the death of a spouse* (Sullivan & Fenelon, 2014). Subramanian, Elwert, and Christakis (2008) found that widowhood increases the risk of dying from almost all causes. However, research suggests that the predictability of the spouse's death plays an important role in the relationship between widowhood and mortality. Elwert and Christakis (2008) found that the rate of mortality for windows and widowers was lower if they had time to prepare for the death of their spouse, such as in the case of a terminal illness like Parkinson's or Alzheimer's. Another factor that influences the risk of mortality is gender. Men show a higher risk of mortality following the death of their spouse if they have higher health problems (Bennett, Hughes, & Smith, 2005). In addition, widowers have a higher risk of suicide than do widows (Ruckenhauser, Yazdani, & Ravaglia, 2007).

Divorce: As noted in Chapter 8, older adults are divorcing at higher rates than in prior generations. However, adults age 65 and over are still less likely to divorce than middle-aged and young adults (Wu & Schimmele, 2007). Divorce poses a number of challenges for older adults, especially women, who are more likely

to experience financial difficulties and are more likely to remain single than are older men (McDonald & Robb, 2004).



Figure 9.40: Divorce in older adults.

However, in both America (Lin, 2008) and England (Glaser, Stuchbury, Tomassini, & Askham, 2008) studies have found that the adult children of divorced parents offer more support and care to their mothers than their fathers. While divorced, older men may be better off financially and are more likely to find another partner, they may receive less support from their adult children.

Dating: Due to changing social norms and shifting cohort demographics, it has become more common for single older adults to be involved in dating and romantic relationships (Alterovitz & Mendelsohn, 2011). An analysis of widows and widowers ages 65 and older found that 18 months after the death of a spouse, 37% of men and 15% of women were interested in dating (Carr, 2004a). Unfortunately, opportunities to develop close relationships often diminish in later life as social networks decrease because of retirement, relocation, and the death of friends and loved ones (de Vries, 1996). Consequently, older adults, much like those younger, are increasing their social networks using technologies, including e-mail, chat rooms, and online dating sites (Fox, 2004; Wright & Query, 2004).

Interestingly, older men and women parallel online dating information as those younger. Alterovitz and Mendelsohn (2011) analyzed 600 internet personal ads from different age groups, and

across the life span, men sought physical attractiveness and offered status related information more than women. With advanced age, men desired women increasingly younger than themselves, whereas women desired older men until ages 75 and over, when they sought men younger than themselves. Research has previously shown that older women in romantic relationships are not interested in becoming a caregiver or becoming widowed for a second time (Carr, 2004a). Additionally, older men are more eager to repartner than are older women (Davidson, 2001; Erber & Szuchman, 2015). Concerns expressed by older women included not wanting to lose their autonomy, care for a potentially ill partner, or merge their finances with someone (Watson & Stelle, 2011).

Older dating adults also need to know about threats to sexual health, including being at risk for sexually transmitted diseases, including chlamydia, genital herpes, and HIV. Nearly 25% of people living with HIV/AIDS in the United States are 50 or older (Office on Women's Health, 2010b). Githens and Abramsohn (2010) found that only 25% of adults 50 and over who were single or had a new sexual partner indicated that they have used a condom the last time they had sex. Robin (2010) stated that 40% of those 50 and over have never been tested for HIV. These results indicated that educating all individuals, not just adolescents, on healthy sexual behavior is important.

Remarriage and Cohabitation: Older adults who remarry often find that their remarriages are more stable than those of younger adults. Kemp and Kemp (2002) suggest that greater emotional maturity may lead to more realistic expectations regarding marital relationships, leading to greater stability in remarriages in later life. Older adults are also more likely to be seeking companionship in their romantic relationships. Carr (2004a) found that older adults who have considerable emotional support from their friends were less likely to seek romantic relationships. In addition, older adults who have divorced often desire the companionship of intimate relationships without marriage. As a result, cohabitation is increasing among older adults, and like remarriage, cohabitation

in later adulthood is often associated with more positive consequences than it is in younger age groups (King & Scott, 2005). No longer being interested in raising children, and perhaps wishing to protect family wealth, older adults may see cohabitation as a good alternative to marriage. In 2014, 2% of adults age 65 and up were cohabitating (Stepler, 2016b).

9.21: Gay and Lesbian Elders

Approximately 3 million older adults in the United States identify as lesbian or gay (Hillman & Hinrichsen, 2014). By 2025 that number is expected to rise to more than 7 million (National Gay and Lesbian Task Force, 2006). Despite the increase in numbers, older lesbian and gay adults are one of the least researched demographic groups, and the research there is portrays a population faced with discrimination. According to the Centers for Disease Control and Prevention (2011), compared to heterosexuals, lesbian and gay adults experience both physical and mental health differences. More than 40% of lesbian and gay adults ages 50 and over suffer from at least one chronic illness or disability, and compared to heterosexuals they are more likely to smoke and binge drink (Hillman & Hinrichsen, 2014). Additionally, gay older adults have an increased risk of prostate cancer (Blank, 2005) and infection from HIV and other sexually transmitted illnesses (Centers for Disease Control and Prevention, 2008). When compared to heterosexuals, lesbian and gay elders have less support from others as they are twice as likely to live alone and four times less likely to have adult children (Hillman & Hinrichsen, 2014).

Lesbian and gay older adults who belong to ethnic and cultural minorities, conservative religions, and rural communities may face additional stressors. Ageism, heterocentrism, sexism, and racism can combine cumulatively and impact the older adult beyond the negative impact of each individual form of discrimination (Hillman & Hinrichsen, 2014). David and Knight (2008) found that older gay black men reported higher rates of racism than younger gay black men and higher levels of perceived ageism than older gay white men.



Figure 9.41: Gay couple.

Although lesbian and gay older adults face many challenges, more than 80% indicate that they engage in some form of wellness or spiritual activity (Fredrickson-Goldsen et al., 2011). They also gather social support from friends and "family members by choice" rather than legal or biological relatives (Hillman & Hinrichsen, 2014). This broader social network provides extra support to gay and lesbian elders.

An important consideration when reviewing the development of gay and lesbian older adults is the cohort in which they grew up (Hillman & Hinrichsen, 2014). The oldest lesbian and gay adults came of age in the 1950s when there were no laws to protect them from victimization. The baby boomers, who grew up in the 1960s and 1970s, began to see states repeal laws that criminalized homosexual behavior. Future lesbian and gay elders will have different experiences due to the legal right for same-sex marriage and greater societal acceptance. Consequently, just like all those in late adulthood, understanding that gay and lesbian elders are a

heterogeneous population is important when understanding their overall development.

9.22: Elder Abuse

Current research indicates that at least 1 in 10, or approximately 4.3 million, older Americans are affected by at least one form of elder abuse per year (Roberto, 2016). Those between 60 and 69 years of age are more susceptible than those older. This may be because younger older adults more often live with adult children or a spouse, two groups with the most likely abusers. Cognitive impairment, including confusion and communication deficits, is the greatest risk factor for elder abuse, while a decline in overall health resulting in greater dependency on others is another. Having a disability also places an elder at a higher risk for abuse (Youdin, 2016). Definitions of elder abuse typically recognize five types of abuse as shown in Table 9.8.

Consequences of elder abuse are significant and include injuries, new or exacerbated health conditions, hospitalizations, premature institutionalization, and early death (Roberto, 2016). Psychological and emotional abuse is considered the most common form, even though it is underreported and may go unrecognized by the elder. Continual emotional mistreatment is very damaging as it becomes internalized and results in late-life emotional problems and impairment. Financial abuse and exploitation is increasing and costs seniors nearly 3 billion dollars per year (Lichtenberg, 2016). Financial abuse is the second most common form after emotional abuse, and affects approximately 5% of elders. Abuse and neglect occurring in a nursing home is estimated to be 25%-30% (Youdin, 2016). Abuse of nursing home residents is more often found in facilities that are run down and understaffed.

Type	
Physical abuse	
Sexual abuse	
Psychological and emotional abuse	
Financial abuse and exploitation	
Neglect and abandonment	

Older women are more likely to be victims than men, and one reason is due to women living longer. Additionally, a family history of violence makes older women more vulnerable, especially for physical and sexual abuse (Acierno et al., 2010). However, Kosberg (2014) found that men were less likely to report abuse. Recent research indicated no differences among ethnic groups in abuse prevalence, however, cultural norms regarding what constitutes abuse differ based on ethnicity. For example, Dakin and Pearlmutter found that working class White women did not consider verbal abuse as elder abuse, and higher socioeconomic status African American and White women did not consider financial abuse as a form of elder abuse (as cited in Roberto, 2016, p. 304).

Perpetrators of elder abuse are typically family members and include spouses/partners and older children (Roberto, 2016). Children who are abusive tend to be dependent on their parents for financial, housing, and emotional support. Substance use, mental illness, and chronic unemployment increase dependency on parents, which can then increase the possibility of elder abuse.

Prosecuting a family member who has financially abused a parent is very difficult. The victim may be reluctant to press charges and the court dockets are often very full resulting in long waits before a case is heard. According to Tanne, family members abandoning older family members with severe disabilities in emergency rooms is a growing problem as an estimated 100,000 are dumped each year (as cited in Berk, 2007). Paid caregivers and professionals trusted to make decisions on behalf of an elder, such as guardians and lawyers, also perpetuate abuse. When elders feel they have social support and are engaged with others, they are less likely to suffer abuse.

9.23: Substance Abuse and the Elderly

Alcohol and drug problems, particularly prescription drug abuse, have become a serious health concern among older adults. Although people 65 years of age and older make up only 13% of the population, they account for almost 30% of all medications prescribed in the United States. According to the National Council on Alcoholism and Drug Dependence (NCADD) (2015), the following statistics illustrate the significance of substance abuse for those in late adulthood:

- There are 2.5 million older adults with an alcohol or drug problem.
- Six to eleven percent of elderly hospital admissions, 14 percent of elderly emergency room admissions, and 20 percent of elderly psychiatric hospital admissions are a result of alcohol or drug problems.
- Widowers over the age of 75 have the highest rate of alcoholism in the U.S.
- Nearly 50 percent of nursing home residents have alcohol related problems.
- Older adults are hospitalized as often for alcoholic related problems as for heart attacks.
- Nearly 17 million prescriptions for tranquilizers are prescribed for older adults each year. Benzodiazepines, a type of tranquilizing drug, are the most commonly misused and abused prescription medications.

Risk factors for psychoactive substance abuse in older adults include social isolation, which can lead to depression (Youdin, 2016). This can be caused by the death of a spouse/partner, family members and/or friends, retirement, moving, and reduced activity

levels. Additionally, medical conditions, chronic pain, anxiety, and stress can all lead to the abuse of substances.

Diagnosis Difficulties: Using criteria from the Diagnostic and Statistical Manual of Disorder-5th Edition (American Psychiatric Association, 2013), diagnosing older adults with a substance use disorder can be difficult (Youdin, 2016). For example, compared to adolescents and younger adults, older adults are not looking to get high, but rather become dependent by accident. Additionally, stereotypes of older adults, which include memory deficits, confusion, depression, agitation, motor problems, and hostility, can result in a diagnosis of cognitive impairment instead of a substance use disorder. Further, a diagnosis of a substance use disorder involves impairment in work, school, or home obligations, and because older adults are not typically working, in school or caring for children, these impairments would not be exhibited. Lastly, physicians may be biased against asking those in late adulthood if they have a problem with drugs or alcohol (NCADD, 2015).

Abused Substances: Drugs of choice for older adults include alcohol, benzodiazepines, opioid prescription medications and marijuana. The abuse of prescription medications is expected to increase significantly. Siriwardena, Qureshi, Gibson, Collier, and Lathamn (2006) found that family physicians prescribe benzodiazepines and opioids to older adults to deal with psychosocial and pain problems rather than prescribe alternatives to medication such as therapy. Those in late adulthood are also more sensitive to the effects of alcohol than those younger because of an age-related decrease in the ratio between lean body mass and fat (Erber & Szuchman, 2015).



Figure 9.42: Alcohol or drug problems in older adults.

Additionally, "liver enzymes that metabolize alcohol become less efficient with age and central nervous system sensitivity to drugs increase with age" (p.134). Those in late adulthood are also more likely to be taking other medications, and this can result in unpredictable interactions with the psychoactive substances (Youdin, 2016).

Cannabis Use: Blazer and Wu (2009) found that adults aged 50-64 were more likely to use cannabis than older adults. These "baby boomers" with the highest cannabis use included men, those unmarried/unpartnered, and those with depression. In contrast to the negative effects of cannabis, which include panic reactions, anxiety, perceptual distortions and exacerbation of mood and psychotic disorders, cannabis can provide benefit to the older adult with medical conditions (Youdin, 2016). For example, cannabis can be used in the treatment for multiple sclerosis, Parkinson's disease, chronic pain, and the fatigue and nausea from the effects of chemotherapy (Williamson & Evans, 2000).

Future Substance Abuse Concerns: There will be an increase in the number of seniors abusing substances in the future because the baby boomer generation has a history of having been exposed

to, and having experienced, psychoactive substance use over their adult life. This is a significant difference from the current and previous generations of older adults (National Institutes of Health, 2014c). Efforts will be needed to adequately address these future substance abuse issues for the elderly due to both the health risks for them and the expected burden on the health care system.

9.24: Successful Aging

Although definitions of successful aging are value-laden, Rowe and Kahn (1997) defined three criteria of successful aging that are useful for research and behavioral interventions. They include:

- Relative avoidance of disease, disability, and risk factors, like high blood pressure, smoking, or obesity
- Maintenance of high physical and cognitive functioning
- Active engagement in social and productive activities

For example, research has demonstrated that age-related declines in cognitive functioning across the adult life span may be slowed through physical exercise and lifestyle interventions (Kramer & Erickson, 2007).

Another way that older adults can respond to the challenges of aging is through compensation. Specifically, **selective optimization with compensation** is used when the elder *makes adjustments, as needed, in order to continue living as independently and actively as possible* (Baltes & Dickson, 2001). When older adults lose functioning, referred to as loss-based selection, they may first use new resources/technologies or continually practice tasks to maintain their skills. However, when tasks become too difficult, they may compensate by choosing other ways to achieve their goals. For example, a person who can no longer drive needs to find alternative transportation, or a person who is compensating for having less energy, learns how to reorganize the daily routine to avoid over-exertion.

9.25: Canadian Resources

Below are resources that provide the Canadian context related to late adulthood.

- ParticipACTION. (2019). *Want to Age Better? The best way to remain healthy, strong and independent is to get active!* https://participaction.cdn.prismic.io/participaction/e4ab2cef-395e-47e4-ab92-f71bdddb58b4_2019+ParticipACTION+Adult+Report+Card+-+Infographic.pdf

9.26: Test your knowledge



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10: DEATH AND DYING

Learning Objectives: Death and Dying

- Define death
- Describe what characterizes physical and social death
- Compare the leading causes of death in the United States with those of developing countries
- Explain where people die
- Describe how attitudes about death and death anxiety change as people age
- Explain the philosophy and practice of palliative care
- Describe the roles of hospice and family caregivers
- Explain the different types of advanced directives
- Describe cultural differences in end of life decisions
- Explain the different types of euthanasia and their controversies
- Describe funeral rituals in different religions
- Differentiate among grief, bereavement, and mourning
- List and describe the stages of loss based on Kübler-Ross's model and describe the criticisms of the model
- Explain the dual-process model of grief
- Identify the impact of losing a child and parent
- Identify the four tasks of mourning
- Explain the importance of support groups for those in grief

We have now reached the end of the lifespan. While it is true that death occurs more commonly at the later stages of age, death can occur at any point in the life cycle. Death is a deeply personal experience evoking many different reactions, emotions, and perceptions. Children and young adults in their prime of life may perceive death differently from adults dealing with chronic illness or the increasing frequency of the death of family and friends. If asked, most people envision their death as quick and peaceful. However, except for a handful of illnesses in which death does often quickly follow diagnosis, or in the case of accidents or trauma, most deaths come after a lengthy period of chronic illness or frailty (Institute of Medicine (IOM), 2015). While modern medicine and better living

conditions have led to a rise in life expectancy around the world, death will still be the inevitable final chapter of our lives.

10.1: Death and Dying

One way to understand death and dying is to look more closely at what defines physical death and social death.

Death Defined: According to the Uniform Determination of Death Act (UDDA) (Uniform Law Commissioners, 1980), death is defined clinically as the following:

> An individual who has sustained either (1) irreversible cessation of circulatory and respiratory functions, or (2) irreversible cessation of all functions of the entire brain, including the brain stem, is dead. A determination of death must be made in accordance with accepted medical standards.

The UDDA was approved for the United States in 1980 by a committee of national commissioners, the American Medical Association, the American Bar Association, and the President's Commission on Medical Ethics. This act has since been adopted by most states and provides a comprehensive and medically factual basis for determining death in all situations.

Death Process: For those individuals who are terminal and death is expected, a series of physical changes occur. Bell (2010) identifies some of the major changes that occur in the weeks, days, and hours leading up to death:

- Weeks Before Passing
    - Minimal appetite; prefer easily digested foods or Increase in the need for sleep
    - Increased weakness
    - Incontinence of bladder and/or bowel
    - Restlessness or disorientation
    - Increased need for assistance with care
- Days Before Passing

    - Decreased level of consciousness
    - Pauses in breathing
    - Decreased blood pressure
    - Decreased urine volume and urine color darkens o Murmuring to people others cannot see
    - Reaching in air or picking at covers
    - Need for assistance with all care
- Days to Hours Before Passing
    - Decreased level of consciousness or comatose-like state
    - Inability to swallow
    - Pauses in breathing become longer
    - Shallow breaths
    - Weak or absent pulse
    - Knees, feet, and/or hands becoming cool or cold
    - Knees, feet, and/or hand discoloring to purplish hue
    - Noisy breathing due to relaxed throat muscles, often called a "death rattle"
    - Skin coloring becoming pale, waxen (pp. 5, 176-177)

Social death begins much earlier than physical death (Pattison, 1977). **Social death** *occurs when others begin to dehumanize and withdraw from someone who is terminally ill or has been diagnosed with a terminal illness* (Glaser & Strauss, 1966). Dehumanization includes ignoring them, talking about them if they were not present, making decisions without consulting them first, and forcing unwanted procedures. Sweeting and Gilhooly (1997) further identified older people in general, and people with a loss of personhood, as having the characteristics necessary to be treated as socially dead. More recently, the concept has been used to describe the exclusion of people with HIV/AIDS, younger people living with terminal illness, and the preference to die at home (Brannelly, 2011). 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.



Figure 10.1: Awareness and support for the terminally ill.

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 (Bell, 2010).

Why would younger or healthier people dehumanize those who are incapacitated, older, or unwell? One explanation is that dehumanization is the result of the healthier person placing a protective distance between themselves and the incapacitated, older, or unwell person (Brannelly, 2011). This keeps the well person from thinking of themselves as becoming ill or in need of assistance. Another explanation is the repeated experience of loss that paid

caregivers experience when working with terminally ill and older people requires a distance which protects against continual grief and sadness, and possibly even burnout.

10.2: Most Common Causes of Death

The United States: In 1900, the most common causes of death were infectious diseases, which brought death quickly. Today, the most common causes of death are chronic diseases in which a slow and steady decline in health ultimately results in death. In 2015, heart disease, cancer, and chronic lower respiratory diseases were the leading causes of death (see Figure 10.2, CDC, 2016).

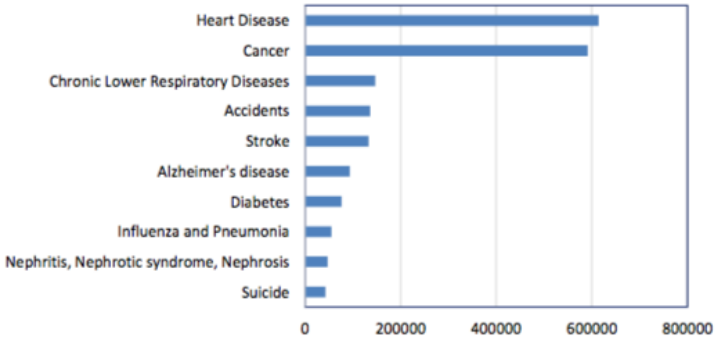


Figure 10.2: Leading Causes of Death in the United States in 2015.

The causes of death vary by age (see Tables 10.1 and 10.2; adapted from CDC, 2015). In infancy, congenital problems and other birth complications are the largest contributors to infant mortality. Accidents, known as unintentional injury, become the leading cause of death throughout childhood and early adulthood. In middle and late adulthood cancer and heart disease become the leading killers.

***Table* 10.1: Top Five C**

< 1	1 – 4
congenital abnormalities	unintentional injury
premature birth	congenital abnormalities
maternal pregnancy complications	homicide
SIDS	malignant neoplasms
unintentional injury	heart disease

***Table* 10.2:**

25 – 34	35 – 44
unintentional injury	unintentional injury
suicide	malignant neoplasms
homicide	heart disease
malignant neoplasms	suicide
heart disease	homicide

The world: The most recent statistics analyzed by the World Health Organization were in 2012, and non- communicable deaths; that is, those not passed from person- to-person, were responsible for 68% of deaths (WHO, 2016). The four most common noncommunicable diseases were cardiovascular disease, cancer, diabetes, and chronic lung diseases. In contrast, communicable diseases, such as HIV and other infectious diseases, neonatal and maternal mortality, and nutritional problems caused 23% of the deaths, and injuries caused the remaining 9% of the deaths.

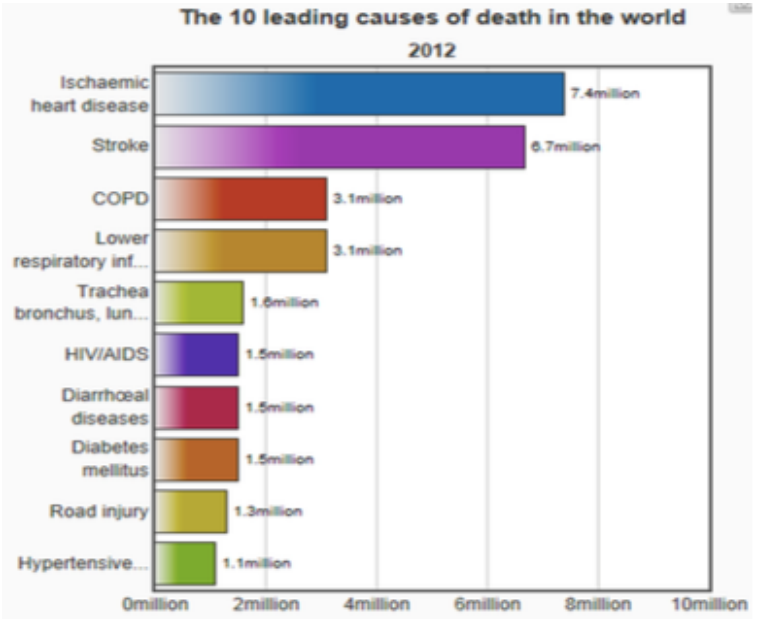


Figure 10.3: The ten leading causes of death in the world in 2012.

Tobacco use is attributed as one of the top killers, and is often the hidden cause behind many of the diseases that result in death, such as heart disease and chronic lung diseases (WHO, 2016).

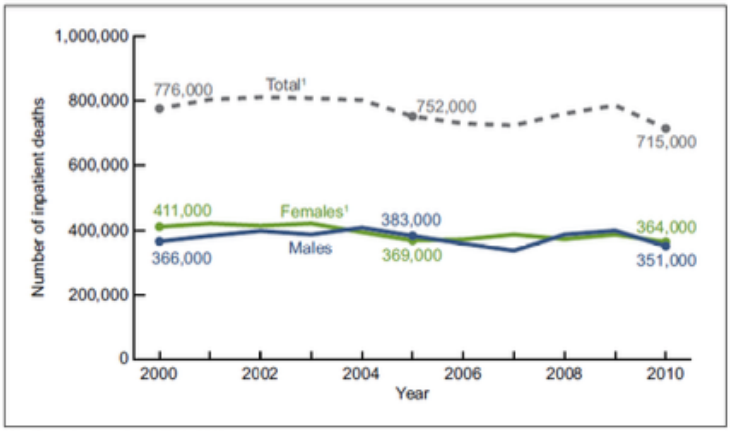
These statistics hide the differences in the causes of death among high versus low income nations. In high-income countries, defined as having a per capita annual income of $12,476 or more, 70% of deaths are among people aged 70 and older. Only 1% of deaths occur in children under 15 years of age. People predominantly die of chronic diseases, such as cardiovascular disease, cancers, dementia, or diabetes. Lower respiratory infections remain the only leading infectious cause of death in such nations. In contrast, in low-income countries, defined as having a per capital annual income of $1025 or less, almost 40% of deaths are among children under age 15, and only 20% of deaths are among people aged 70 years and older. People predominantly die of infectious diseases such as lower respiratory infections, HIV/AIDS, diarrheal diseases, malaria and tuberculosis. These account for almost one third of all deaths in

these countries. Complications of childbirth due to prematurity, birth asphyxia, and birth trauma are among the leading causes of death for newborns and infants in the poorest of nations (WHO, 2016).

10.3: Where Do People Die?

Gathering statistics on the location of death is not a simple matter. Those with terminal illnesses may be going through the process of dying at home or in a nursing home, only to be transported to a hospital in the final hours of their life. Thus, it should not be a surprise that in the United States, more Americans die in hospitals than in any other settings. However, as can be seen in figure 10.4, there has been a decline in the number of people dying in hospital in the last decade (Hall, Levant, & DeFrances, 2013). This decline can be tied to two changes in the U.S. health care system: Medicare, and other private insurance plans, covering the cost of hospice care, and Medicare paying hospitals to encourage less use of inpatient hospital care (IOM, 1997).

Figure 1. Inpatient hospital deaths: United States, 2000–2010



¹Significant decrease from 2000 to 2010.
NOTE: Statistical significance was measured using a weighted least-squares regression method, including data from all years, to measure linear trends over time.
SOURCE: CDC/NCHS, National Hospital Discharge Survey, 2000–2010.

Internationally, 54% of deaths in over 45 nations occurred in hospitals, with the most frequent occurring in Japan (78%) and the least frequent occurring in China (20%), according to a study by

Broad et al. (2013). They also found that for older adults, 18% of deaths occurred in some form of residential care, such as nursing homes, and that for each decade after age 65, the rate of dying in a such settings increased 10%. In addition, the number of women dying in residential care was considerably higher than for males.

10.4: 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 mothers 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:** Although children in middle childhood begin to understand the finality of death, up until the age of 9 they may still participate in magical thinking and believe that through their thoughts they can bring someone back to life. They also may think that they could have prevented the death in some way, and consequently feel guilty and responsible for the death.



Figure 10.4: The concept of death during childhood.

- **Late Childhood:** At this stage, children 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 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.

- **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, 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.

10.5: Curative, Palliative, and Hospice Care

When individuals become ill, they need to make choices about the treatment they wish to receive. One's age, type of illness, and personal beliefs about dying affect the type of treatment chosen (Bell, 2010).

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.



Figure 10.5: Palliative care to provide comfort and relief.

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.

According to Shannon (2006), 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

In 2013, an estimated 1.5 million people received hospice care (NHPCO, 2014). The majority of patients on hospice are cancer patients and typically do not enter hospice until the last few weeks prior to death. The median length of stay was 18 days, and one out of three patients were on hospice for less than a week.

Although hospice care has become more widespread, these new programs are subjected to more rigorous insurance guidelines that dictate the types and amounts of medications used, length of stay, and types of patients who are eligible to receive hospice care (Weitz, 2007). Thus, more patients are being served, but providers have less control over the services they provide, and lengths of stay are more limited.

Not all racial and ethnic groups feel the same way about hospice care. African-American families may believe that medical treatment should be pursued on behalf of an ill relative as long as possible and that only God can decide when a person dies. Chinese-American families may feel very uncomfortable discussing issues of death or being near the deceased family member's body. The view that hospice care should always be used is not held by everyone, and health care providers need to be sensitive to the wishes and beliefs of those they serve (Coolen, 2012).

Family Caregivers

According to the Institute of Medicine (2015), it is estimated that 66 million Americans, or 29% of the adult population, are caregivers for someone who is dying or chronically ill. Two- thirds of these

caregivers are women. This care takes its toll physically, emotionally, and financially. Family caregivers may face the physical challenges of lifting, dressing, feeding, bathing, and transporting a dying or ill family member. They may worry about whether they are performing all tasks safely and properly, as they receive little training or guidance. Such caregiving tasks may also interfere with their ability to take care of themselves and meet other family and workplace obligations. Financially, families may face high out of pocket expenses (IOM, 2015).



Figure 10.6: Family caregivers.

As can be seen in Table 10.3, most family caregivers are employed, are providing care by themselves with little professional intervention, and there are high costs in lost productivity. As the prevalence of chronic disease rises, the need for family caregivers is growing. Unfortunately, the number of potential family caregivers

is declining as the large baby boomer generation enters into late adulthood (Redfoot, Feinberg, & Houser, 2013).

***Table* 10.3: Cl**

Characteristic
No home visits by health care professionals
Caregivers are also employed
Caregivers for the elderly
Duration of employed workers who have been caregiving for 3+ ye
Annual cost of lost productivity due to absenteeism from working due to pr

10.6: Advanced Directives

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 initiates the person wishes under certain circumstances*. **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-incubate, 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 heath care settings (IOM, 2015).

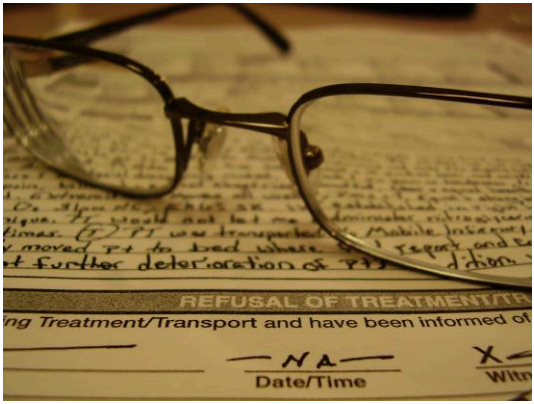


Figure 10.7: Living wills help identify what treatments are acceptable to the patient or which are refused.

10.7: Cultural Differences in End-of-Life Decisions

According to Searight and Gafford (2005a), cultural factors strongly influence how doctors, other health care providers, and family members communicate bad news to patients, the expectations regarding who makes the health care decisions, and attitudes about end-of-life care. In the United States, doctors take the approach that patients should be told the truth about their health. Outside the United States and among certain racial and ethnic groups within the United States, doctors and family members may conceal the full nature of a terminal illness as revealing such information is viewed as potentially harmful to the patient, or at the very least, is seen as disrespectful and impolite. Holland, Geary, Marchini and Tross (1987) found that many doctors in Japan and in numerous African nations used terms such as "mass," "growth," and "unclean tissue" rather than referring to cancer when discussing the illness to patients and their families. Family members actively protect terminally ill patients from knowing about their illness in many Hispanic, Chinese, and Pakistani cultures (Kaufert & Putsch, 1997; Herndon & Joyce, 2004).



Figure 10.8: End-of-life decision making.

In the United States, we view the patient as autonomous in health care decisions (Searight & Gafford, 2005a), while in other nations the family or community plays the main role, or decisions are made primarily by medical professionals, or the doctors in concert with the family make the decisions for the patient. For instance, in comparison to European Americans and African Americans, Koreans and Mexican-Americans are more likely to view family members as the decision makers rather than just the patient (Berger, 1998; Searight & Gafford, 2005a). In many Asian cultures, illness is viewed as a "family event", not just something that impacts the individual patient (Candib, 2002). Thus, there is an expectation that the family has a say in the health care decisions. As many cultures attribute high regard and respect for doctors, patients and families may defer some of the end-of-life decision making to the medical professionals (Searight & Gafford, 2005b).

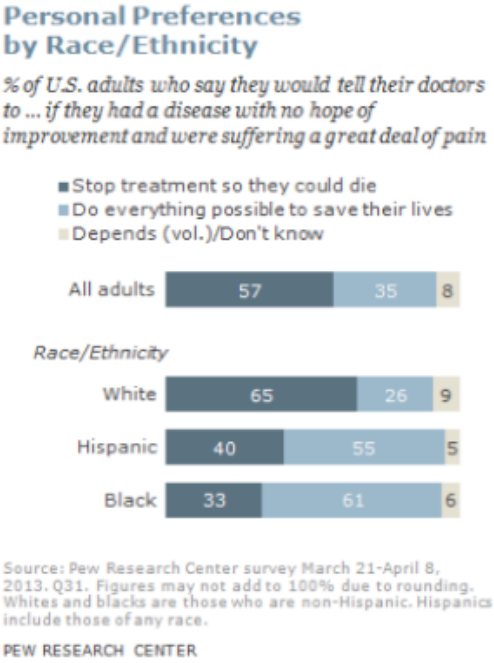


Figure 10.9: Personal Preferences by Race/Ethnicity.

According to a Pew Research Center Survey (Lipka, 2014), while death may not be a comfortable topic to ponder, 37% of their survey respondents had given a great deal of thought about their end-of-life wishes, with 35% having put these in writing. Yet, over 25% had given no thought to this issue. Lipka (2014) also found that there were clear racial and ethnic differences in end-of-life wishes (see Figure 10.10). Whites are more likely than Blacks and Hispanics to prefer to have treatment stopped if they have a terminal illness. While the majority of Blacks (61%) and Hispanics (55%) prefer that everything be done to keep them alive. Searight and Gafford (2005a) suggest that the low rate of completion of advanced directives among non-whites may reflect a distrust of the U.S. health care system as a result of the health care disparities non-whites have experienced. Among Hispanics, patients may also be reluctant to select a single family member to be responsible for end-of- life

decisions out of a concern of isolating the person named and of offending other family members, as this is commonly seen as a "family responsibility" (Morrison, Zayas, Mulvihill, Baskin, & Meier, 1998).

10.8: Euthanasia

Euthanasia is defined as *intentionally ending one's life when suffering from a terminal illness or severe disability* (Youdin, 2016). Euthanasia is further separated into **active euthanasia**, which is intentionally causing death, usually through a lethal dose of medication, and **passive euthanasia** occurs when life-sustaining support is withdrawn. This can occur through the removal of a respirator, feeding tube, or heart-lung machine.

Physician-assisted suicide *is a form of active euthanasia whereby a physician prescribes the means by which a person can die.* The United States federal government does not legislate physician-assisted suicide as laws are handled at the state level (ProCon.org, 2016). Six states currently allow physician-assisted suicide. The person seeking physician-assisted suicide must be: (1) at least 18 years of age, (2) have six or less months until expected death, and (3) obtain two oral (or least 15 days apart) and one written request from a physician (ProCon.org, 2016). Table 10.4 lists the states that allow physician-assisted suicide and the date the act was passed.

Table 10.4:

State	
Oregon	
Washington	
Montana	
Vermont	
California	
Colorado	

Since 1997 when the law was passed in Oregon, 1545 people had lethal prescriptions written and 991 patients had died from the medication by the end of 2015 (Oregon Public Health Division, 2016).

Canada and several European countries, including Switzerland, Belgium, Luxembourg, and the Netherlands, also allow physician-assisted suicide. As of 2014, Belgium is the only country that allows the right to die to those under the age of 18. Stricter conditions were put in place for children, including parental consent, the child must be suffering from a serious and incurable disease, the child must understand what euthanasia means, and the child's death must be expected in the near future (Narayan, 2016).



Figure 10.10: Hippocratic oath and euthanasia.

The practice of physician-assisted euthanasia is certainly controversial with religious, legal, ethical, and medical experts weighing in with opinions. The main areas where there is

disagreement between those who support physician-assisted euthanasia and those who do not include:

1. whether a person has the legal right to die,
2. whether active euthanasia would become a "slippery slope" and start a trend to legalize deaths for individuals who may be disabled or unable to give consent,
3. how to interpret the Hippocratic Oath and what it exactly means for physicians to do no harm,
4. whether the government should be involved in end-of-life decisions, and
5. specific religious restrictions against deliberately ending a life (ProCon.org, 2016).

Not surprisingly, there are strong opinions on both sides of this topic. According to a 2013 Pew Research Center survey, 47% of Americans approve and 49% disapprove of laws that would allow a physician to prescribe lethal doses of drugs that a terminally ill patient could use to commit suicide (Pew Research Center, 2013). Attitudes on physician-assisted suicide were roughly the same in 2005, when 46% approved and 45% disapproved.

10.9: Religious Practices After Death

Funeral rites are expressions of loss that reflect personal and cultural beliefs about the meaning of death and the afterlife. 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. 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. The following are some of the religious practices regarding death, however, individual religious interpretations and practices may occur (Dresser & Wasserman, 2010; Schechter, 2009).

Hindu: The Hindu belief in reincarnation accelerates the funeral ritual, and deceased Hindus are cremated as soon as possible. After being washed, the body is anointed, dressed, and then placed on a stand decorated with flowers ready for cremation. Once the body has been cremated, the ashes are collected and, if possible, dispersed in one of India's holy rivers.

Judaism: Among the Orthodox, the deceased is first washed and then wrapped in a simple white shroud. Males are also wrapped in their prayer shawls. Once shrouded the body is placed into a plain wooden coffin. The burial must occur as soon as possible after death, and a simple service consisting of prayers and a eulogy is given. After burial the family members typically gather in one home, often that of the deceased, and receive visitors. This is referred to as "sitting shiva".

Muslim: In Islam the deceased are buried as soon as possible, and

it is a requirement that the community be involved in the ritual. The individual is first washed and then wrapped in a plain white shroud called a kafan. Next, funeral prayers are said followed by the burial. The shrouded dead are placed directly in the earth without a casket and deep enough not to be disturbed. They are also positioned in the earth, on their right side, facing Mecca, Saudi Arabia.



Figure 10.11: Cemetery flowers.

Roman Catholic: Before death an ill Catholic individual is anointed by a priest, commonly referred to as the Anointing of the Sick. The priest recites a prayer and applies consecrated oil to the forehead and hands of the ill person. The individual also takes a final communion consisting of consecrated bread and wine. The funeral rites consist of three parts. First is the wake that usually occurs in a funeral parlor. The body is present and prayers and eulogies are offered by family and friends. The funeral mass is next which includes an opening prayer, bible readings, liturgy, communion, and a concluding rite. The funeral then moves to the cemetery where a

blessing of the grave, scripture reading, and prayers conclude the funeral ritual.

10.10: 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 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, and symptoms typically diminish within 6-10 weeks (Youdin, 2016).



Figure 10.12: Grieving.

Complicated Grief: After the loss of a loved one, however, 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 a yearning for the deceased. Additionally, these symptoms may last six months or longer and 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, abortions, the death of a pet, lover, 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.

Models 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.

Five Stages of Grief: Kübler-Ross (1969, 1975) describes five stages of loss experienced by someone who faces the news of their impending death. 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.

- **Denial** is often the first reaction to overwhelming, unimaginable news. Denial, or 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 question the results, seek second opinions, or may simply feel a sense of disbelief psychologically even though they know that the results are true.
- **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 the unknown. 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, 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.
- **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** or sadness is appropriate for such an event. Feeling the full weight of loss, crying, and losing interest in the

outside world is an important part of the process of dying. This depression makes others feel very uncomfortable and family members may try to console their loved one. Sometimes hospice care may include the use of antidepressants to reduce depression during this stage.

- **Acceptance** involves learning how to carry on and to incorporate this aspect of the life span into daily existence. 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 always in the back of their minds.

Criticisms of Kübler-Ross's Five Stages of Grief: 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). While she goes on to say in support of her approach that she and her students read nothing about the prior literature on death and dying, so as to have no preconceived ideas, a later work revealed that her own experiences of grief from childhood undoubtedly colored her perceptions of the grieving process (Kübler-Ross & Kessler, 2005).

Kübler-Ross is adamant in her theory that the one stage that all those who are dying go through is anger. It is clear from her 2005 book that anger played a central role in "her" grief, and did so for many years (Friedman & James, 2008).

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 Kübler-Ross's five stage theory of grief (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).

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: Loss of Children and Parents

Loss of a Child: According to Parkes and Prigerson (2010), the loss of a child at any age is considered "the most distressing and long-lasting of all griefs" (p. 142). Bereaved parents suffer an increased risk to both physical and mental health and exhibit an increased mortality rate. Additionally, they earn higher scores on inventories of grief compared to other types of bereavement. Of those recently diagnosed with depression, a high percentage had experienced the death of child within the preceding six months, and 8 percent of women whose child had died attempted or committed suicide. Archer (1999) found that the intensity of grief increased with the child's age until the age of 17, when it declined. Archer explained that women have a greater chance of having another child when

younger, and thus with added age comes greater grief as fertility declines. Certainly, the older the child the more the mother has bonded with the child and will experience greater grief.

Even when children are adults, parents may experience intense grief, especially when the death is sudden. Adult children dying in traffic accidents was associated with parents experiencing more intense grief and depression, greater symptoms on a health check list, and more guilt than those parents whose adult children died from cancer (Parkes & Prigerson, 2010). Additionally, the deaths of unmarried adult children still residing at home and those who experienced alcohol and relationship problems were especially difficult for parents. Overall, in societies in which childhood deaths are statistically infrequent, parents are often unprepared for the loss of their daughter or son and suffer high levels of grief.



Figure 10.13: Siblings comfort one another.

Loss of Parents in Adulthood: In contrast to the loss of a child, the loss of parents in adult life is much more common and results in less suffering. In their literature review, Moss and Moss (1995) found that the loss of a parent in adult life is "rarely pathological."

Those adult children who appear to have the most difficulty dealing with the loss of a parent are adult men who remain unmarried and continue to live with their mothers. In contrast, those who are in satisfying marriages are less likely to require grief assistance (Parkes & Prigerson, 2010). To determine the effects of gender on parental death, Marks, Jun and Song (2007) analyzed longitudinal data from the National Survey of Families and Households that assessed multiple dimensions of psychological well-being in adulthood including depression, happiness, self-esteem, mastery, psychological wellness, alcohol abuse, and physical health. Findings indicated that a father's death led to more negative effects for sons than daughters, and a mother's death lead to more negative effects for daughters.



Figure 10.14: Loss of parents in childhood.

Loss of Parents in Childhood: Parental deaths in childhood have been associated with adjustment problems that may last into adulthood. Ellis, Dowrick and Lloyd-Williams (2013) identified several negative outcomes associated with childhood grief including increased chance of substance abuse, greater susceptibility to

depression, higher chance of criminal behavior, school underachievement, and lower employment rates. Typically, professional help is not required in helping children and teens who are dealing with the death of a loved one. However, Worden (2002) identified ten "red flags" displayed by grieving children that may indicate the need for professional assistance:

- Persistent difficulty in talking about the dead person
- Persistent or destructive aggressive behavior
- Persisting anxiety, clinging, or fears
- Somatic complaints (stomachaches, headaches)
- Sleeping difficulties
- Eating disturbance
- Marked social withdrawal
- School difficulties or serious academic reversal
- Persistent self-blame or guilt
- Self-destructive behavior

As parents may also be dealing with funeral arrangements and other end of life matters, they may not always have the time to address questions and concerns that children may have. When explaining death to children it is important to use real words, such as died and death (Dresser & Wasserman, 2010). Children do not understand the meanings of such phrases as "passed away", "left us", or "lost", and they can become confused as to what happened. Saying a loved one died of a disease called cancer, is preferable to saying he was "very sick". The child may become worried when others become sick that they too will die. Consequently, it is important that children have someone who will listen to, and accurately address their concerns.

Mourning

As a society, are we given the tools and time to adequately mourn?

Not all researchers agree that we do. The "death-denying, grief-dismissing world" is the modern world (Kübler-Ross & Kessler, 2005, p. 205). We often grieve privately, quickly, and medicate our suffering with substances or activities. Employers grant 3 to 5 days for bereavement, if the 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 after just a few days. Obviously life does have to continue, but we need to acknowledge and make more caring accommodations for 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



Figure 10.15: Support groups.

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 religious 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.

10.11: Canadian Resources

Below are resources that provide the Canadian context related to death and dying.

- Statistics Canada. (2020). *Inequalities in life expectancy in Canada, 2011 to 2016* [Infographic]. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2020004-eng.htm
- Statistics Canada. (2017). *Mortality trends in Canada, 2013* [Infographic]. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2017022-eng.htm

10.12: Test your knowledge



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Chapter 10

Aspects of Death, Kubler-Ross Model, and Anticipatory Grief

Glossary

Abstract principles

During the formal operational stage, adolescents are able to understand abstract principles which have no physical reference.

Accommodation

Expanding the framework of knowledge to accommodate a new situation.

Achievement tests

Used to measure what a child has already learned.

Acne

Pimples on the skin due to overactive sebaceous (oil-producing) glands.

Active euthanasia

Intentionally causing death, usually through a lethal dose of medication.

Active genotype-environment correlation

Occurs when individuals seek out environments that support their genetic tendencies.

Activity Theory

States that greater satisfaction with one's life occurs with those who remain active.

Adaptive immune system

The adaptive immune system includes the tonsils, spleen, bone marrow, thymus, circulatory system and the lymphatic system that work to produce and transport T cells.

Advance directives

Include documents that mention a health care agent and living wills.

Advanced care planning

Refers to all documents that pertain to end-of-life care.

Advanced sleep phase syndrome

Similar to other adults, older adults need between 7 to 9 hours of sleep per night, but they tend to go to sleep earlier and get up earlier than those younger. This pattern is called advanced sleep phase syndrome.

Age of viability

The first chance of survival outside the womb, known as the age of viability, is reached at about 24 weeks.

Age-grade

A specific age group, such as toddler, adolescent, or senior.

Age-related macular degeneration

The loss of clarity in the center field of vision, due to the deterioration of the macula, the center of the retina.

Ageism

Prejudice based on age.

Alleles

Different versions of a gene.

Amniocentesis

A procedure in which a needle is used to withdraw a small amount of amniotic fluid and cells from the sac surrounding the fetus and later tested.

Analytic thought

Deliberate, conscious, and rational.

Analytical Intelligence

Refers to academic problem solving and performing calculations.

Animism

Refers to attributing life-like qualities to objects.

Anosmia

Total loss of smell.

Anoxia

A temporary lack of oxygen to the brain.

Anticipatory grief

Grief that occurs when a death is expected and survivors have time to prepare to some extent before the loss.

Apoptosis

The process of programmed cell death.

Articulation disorder

Refers to the inability to correctly produce speech sounds (phonemes) because of imprecise placement, timing, pressure, speed, or flow of movement of the lips, tongue, or throat.

Asexuality

Refers to having no sexual attraction to any sex/gender.

Assimilation

Fitting the new information into an existing schema.

Atherosclerosis

A buildup of fatty plaque in the arteries.

Attachment

The close bond with a caregiver from which the infant derives a sense of security.

Attachment-related anxiety

Refers to the extent to which an adult worries about whether their partner really loves them.

Attachment-related avoidance

Refers to whether an adult can open up to others, and whether they trust and feel they can depend on others.

Attention Deficit Hyperactivity Disorder

A child with Attention Deficit Hyperactivity Disorder (ADHD) shows a constant pattern of inattention and/or hyperactive and impulsive behavior that interferes with normal functioning.

Attraction

What makes people like, and even love, each other.

Attrition

Occurs when participants fail to complete all portions of a study.

Authoritarian

The traditional model of parenting in which parents make the rules and children are expected to be obedient.

Authoritative

Authoritative parents are supportive and show interest in their kids' activities, but are not overbearing and allow them to make constructive mistakes.

Autistic savants

People who score low on intelligence tests overall but who nevertheless may have exceptional skills in a given domain, such as math, music, art, or in being able to recite statistics in a given sport.

Autobiographical memory

Our personal narrative.

Babbling

Intentional vocalizations that lack specific meaning and comprise a consonant-vowel repeated sequence, such as ma-ma-ma, da-da-da.

Basic emotions

Interest, happiness, anger, fear, surprise, sadness and disgust.

Behavioral Genetics

The scientific study of the interplay between the genetic and environmental contributions to behavior.

Bereavement

The period after a loss during which grief and mourning occurs.

Bicultural identity

The individual sees himself or herself as part of both the ethnic minority group and the larger society.

Biofeedback

A technique where the individual is shown bodily information that is not normally available to them (e.g., heart rate), and then taught strategies to alter this signal.

Biological age

How quickly the body is aging.

Bisexuality

Refers to attraction to any sex or gender.

Blastocyst

Consists of both an inner and outer group of cells.

Body Mass Index (BMI)

Expresses the relationship of height to weight.

Boomerang kids

Young adults who are returning after having lived independently outside the home.

Broca's area

An area in front of the left hemisphere near the motor cortex that is responsible for language production.

Bullying

Unwanted, aggressive behavior among school aged children that involves a real or perceived power imbalance.

Burnout

Refers to becoming disillusioned and frustrated at work.

Cancer

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.

Carriers

Those who have inherited only one recessive-gene.

Case studies

Descriptive records of one or a small group of individuals' experiences and behavior.

Cataracts

Clouding of the lens of the eye.

Categorical self

Focused on external qualities.

Cellular senescence

A cell turning itself off.

Central executive

Oversees working memory, allocating resources where needed and monitoring whether cognitive strategies are being effective.

Centration

Refers to focusing on only one characteristic of an object to the exclusion of others.

Cephalocaudal

From head to tail.

Cephalocaudal development

Growth from head to tail.

Cesarean Section (C-section)

A Cesarean Section (C-section) is surgery to deliver the baby by being removed through the mother's abdomen.

Child Abuse and Neglect

Refers to any recent act or failure to act on the part of a parent or caretaker which results in death, serious physical or emotional harm, sexual abuse or exploitation; or an act or failure to act, which presents an imminent risk of serious harm.

Cholesterol

A waxy fatty substance carried by lipoprotein molecules in the blood.

Chorionic Villus Sampling

A procedure in which a small sample of cells is taken from the placenta and tested.

Chromosomal abnormality

Occurs when a child inherits too many or two few chromosomes.

Chronic illnesses

Illnesses that are ongoing, generally incurable conditions that require continuing medical attention and affect daily life.

Chronic obstructive pulmonary disease (COPD)

A progressive lung disease in which the airways become damaged making it difficult to breathe.

Chronological age

The number of years since your birth.

Chronosystem

The historical context in which these experiences occur.

Circumcision

Refers to the surgical removal of the foreskin of the penis.

Cirrhosis

A disease in which the liver becomes scarred and does not function properly.

Cisgender

Individuals who identify with a role that corresponds to the sex assigned to them at birth (for example, they were born with male sex characteristics, were assigned as a boy, and identify today as a boy or man) are cisgender.

Climacteric

Refers to the midlife transition when fertility declines.

Cliques

Groups of individuals who interact frequently.

Clustering rehearsal

In clustering rehearsal, we rehearses previous material while adding in additional information.

Cognitive behavioral therapy (CBT)

To eliminate binge-eating and purging behaviors, cognitive behavioral therapy (CBT) assists sufferers by identifying distorted thinking patterns and changing inaccurate beliefs.

Cognitive domain

Encompasses the changes in intelligence, wisdom, perception, problem- solving, memory, and language.

Cognitive theories

Focus on how our mental processes or cognitions change over time.

Cohort

A group of people who are born at roughly the same period in a particular society.

Cohort effect

Impact of having been born in a certain time-period.

Commitment

The conscious decision to stay together.

Competent loners

Among divorcees, the competent loners are those who used their divorce experience to grow emotionally, but who choose to stay single.

Complicated grief

Includes atypical grief reactions.

Concrete Operational Stage

Involves mastering the use of logic in concrete ways.

Consensual validation

Having others like and believe in the same things we do makes us feel validated in our beliefs.

Conservation

Refers to the ability to recognize that moving or rearranging matter does not change the quantity.

Contact comfort

The infant's need for physical closeness and touching.

Contextual information

The information surrounding language.

Continuous development

Assume development is a more slow and gradual process.

Conventional morality

Conventional morality is about people caring about the effect of their actions on others.

Convergent Thinking

Thinking that is directed toward finding the correct answer to a given problem.

Convoy Model of Social Relations

Suggests that the social connections that people accumulate differ in levels of closeness and are held together by exchanges in social support.

Cooing

A one-syllable combination of a consonant and a vowel sound (e.g., coo or ba).

Corpus Callosum

A dense band of fibers that connects the two hemispheres of the brain.

Correlational research

Research designed to discover relationships among variables and to allow the prediction of future events from present knowledge.

Cortex

The thin outer covering of the brain involved in voluntary activity and thinking.

Creative Intelligence

Refers to the ability to adapt to new situations and create new ideas.

Critical thinking

Refers to a detailed examination of beliefs, courses of action, and evidence.

Cross-sectional research

Compares samples that represent a cross-section of the population who vary in age.

Crowds

Characterized more by shared reputations or images than actual interactions.

Crystallized intelligence

Refers to the accumulated knowledge of the world we have acquired throughout our lives.

Cultural relativity

An appreciation for cultural differences and the understanding that cultural practices are best understood from the standpoint of that particular culture.

Culture

The totality of our shared language, knowledge, material objects, and behavior.

Curative care

Designed to overcome and cure disease and illness.

Cyberbullying

A recent form of bullying that involves electronic technology.

Damage or Error Theories

Emphasize environmental factors that cause cumulative damage in organisms.

Debriefing

A procedure designed to fully explain the purposes and procedures of the research and remove any harmful aftereffects of participation.

Deception

Occurs whenever research participants are not completely and fully informed about the nature of the research project before participating in it.

Declarative memories

Sometimes referred to as explicit memories, they are memories for facts or events that we can consciously recollect.

Deductive reasoning

This type of reasoning starts with some overarching principle, and based on this proposes specific conclusions.

Deep structure

The deep structure of an idea refers to how the idea is represented in the fundamental universal grammar that is common to all languages.

Deferred Imitation

Refers to the imitation of actions after a time delay.

Delayed gratification

The ability to hold out for a larger reward by forgoing a smaller immediate reward.

Dendrites

Branching extensions that collect information from other neurons.

Dependent variable

In an experiment is a measured variable that is expected to be influenced by the experimental manipulation.

Descriptive research

Research that describes what is occurring at a particular point in time.

Developmental Psychology

Also known as Human Development or Lifespan Development, developmental psychology is the scientific study of ways in which people change, as well as stay the same, from conception to death.

Deviant peer contagion

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.

Diabetes

A disease in which the body does not control the amount of glucose in the blood.

Dialectical thought

The ability to bring together salient aspects of two opposing viewpoints or positions.

Diastolic pressure

The pressure in the blood vessels when the heart is at rest.

Dichotomies

Ideas are true or false; good or bad; and there is no middle ground.

Directed forgetting

In directed forgetting people are asked to forget or ignore some information, but not other information.

Disenfranchised grief

Grief that is not socially recognized.

Distalproximal development

Growth in adolescence proceeds from the extremities toward the torso.

Divergent Thinking

The ability to generate many different ideas or solutions to a single problem.

Divided attention

The ability to switch our focus between tasks or external stimuli is called divided attention or multitasking.

Dizygotic

Two eggs or ova are released and fertilized by two separate sperm, resulting in dizygotic or fraternal twins.

Dominant genes

Express themselves in the phenotype even when paired with a different version of the gene

Dopamine

Involved in reward circuits.

Down syndrome

A chromosomal disorder caused by the presence of all or part of an extra 21st chromosome.

Dry eye syndrome

Occurs when the eye does not produce tears properly, or when the tears evaporate too quickly because they are not the correct consistency.

Durable power of attorney for health care

Durable power of attorney for health care names the person who should make health care decisions in the event that the patient is incapacitated.

Dyscalculia

Refers to problems in math.

Dysgraphia

A writing disability.

Dyslexia

Involves having difficulty in the area of reading.

Eclampsia

When preeclampsia causes seizures, the condition is known as eclampsia.

Ecological Systems Theory

Provides a framework for understanding and studying the many influences on human development

Ecotopic pregnancy

Occurs when a fertilized egg implants itself outside of the uterus.

Ectopic Pregnancy

Occurs when the zygote becomes attached to the fallopian tube before reaching the uterus.

Egocentric Speech

A practice engaged in because of a child's inability to see things from another's point of view.

Egocentrism

Refers to the tendency of young children not to be able to take the perspective of others, and instead the child thinks that everyone sees, thinks, and feels just as they do.

Embryo

Multi-cellular organism.

Embryonic disk

The inner group of cells, or embryonic disk, become the embryo.

Emotion-focused coping

Regulates the emotions that come with stress.

Emotional self-regulation

Refers to strategies we use to control our emotional states so that we can attain goals.

Empty nest

Refers to the time period when children are grown up and have left home.

Empty nest syndrome

Refers to great emotional distress experienced by parents, typically mothers, after children have left home.

Encopresis

The repeated passage of feces into inappropriate places (involuntary or intentional).

Endogamy

Rules of endogamy indicate the groups we should marry within and those we should not marry in.

Enhancers

Among divorcees, the enhancers are those who had used the experience to better themselves and seek more productive intimate relationships.

Enuresis

The repeated voiding of urine into bed or clothes (involuntary or intentional).

Epidural block

A regional analgesic that can be used during labor and alleviates most pain in the lower body without slowing labor.

Epigenesis

Refers to how environmental factors are thought to change gene expression by switching genes on and off.

Epigenetics

studies modifications in DNA that affect gene expression and are passed on when the cells divide.

Episodic memories

Tied to specific events in time.

Ethnic identity

Refers to how people come to terms with who they are based on their ethnic or racial ancestry.

Ethnocentrism

The belief that our own culture is superior.

Euthanasia

Intentionally ending one's life when suffering from a terminal illness or severe disability.

Event-based prospective memories

Having to remember to do something when a certain event occurs.

Evocative genotype-environment correlation

Refers to how the social environment reacts to individuals based on their inherited characteristics.

Excitement phase

The phase in which the intrinsic (inner) motivation to pursue sex arises.

Executive function (EF)

Refers to self-regulatory processes, such as the ability to inhibit a behavior or cognitive flexibility, that enable adaptive responses to new situations or to reach a specific goal.

Exosystem

Includes the larger contexts of community.

Experimental research

Research in which a researcher manipulates one or more variables to see their effects.

Expertise

Refers to specialized skills and knowledge that pertain to a particular topic or activity.

Extraneous variables

Variables that are not part of the experiment that could inadvertently effect either the experimental or control group, thus distorting the results.

Family capital

A form of power that can be used to improve a child's education.

Fast-mapping

Words are easily learned by making connections between new words and concepts already known.

Fetal Alcohol Spectrum Disorders (FASD)

An umbrella term for the range of effects that can occur due to alcohol consumption during pregnancy

Fetus

From the ninth week until birth, the organism is referred to as a fetus.

Fine motor skills

Focus on the muscles in our fingers, toes, and eyes, and enable coordination of small actions (e.g., grasping a toy, writing with a pencil, and using a spoon).

Floaters

Little spots or “cobwebs” that float around the field of vision.

Flow

The mental state of being completely present and fully absorbed in a task.

Fluency disorders

Affect the rate of speech.

Fluid intelligence

Refers to the capacity to learn new ways of solving problems and performing activities quickly and abstractly.

Flynn effect

Refers to the observation that scores on intelligence tests worldwide have increased substantially over the past decades.

Follicle-stimulating hormone (FSH)

Responsible for ovulation in females by triggering egg maturity; it also stimulates sperm production in males.

Free radicals

Free radicals are missing an electron and create instability in surrounding molecules by taking electrons from them.

Frontal lobe

Responsible primarily for thinking, planning, memory, and judgment.

Gallstones

Hard particles, including fatty materials, bile pigments, and calcium deposits, that can develop in the gallbladder.

Gamete intra-fallopian tube transfer (GIFT)

Involves implanting both sperm and ova into the fallopian tube and fertilization is allowed to occur naturally.

Gatekeep

Post-divorce parents gatekeep, that is, they regulate the flow of information about their new romantic partner to their children.

Gender

Refers to social or cultural distinctions associated with a given sex.

Gender Dysphoria

Refers to the distress accompanying a mismatch between one's gender identity and biological sex.

Gender Identity

Refers to the self-identification based on a continuum from male to female.

Gender role

Refers to society's concept of how men and women are expected to act and behave.

Gender Roles

The expectations associated with being male or female.

Gender Schemas

Our own conceptions of the attributes associated with maleness or femaleness.

General Adaptation Syndrome

A three-phase model of stress, which includes a mobilization of physiological resources phase, a coping phase, and an exhaustion phase (i.e., when an organism fails to cope with the stress adequately and depletes its resources).

General Intelligence Factor (g)

The construct that the different abilities and skills measured on intelligence tests have in common.

Generativity

Encompasses procreativity, productivity, and creativity.

Genes

Recipes for making proteins.

Genetic counseling

A service that assists individuals identify, test for, and explain potential genetic conditions that could adversely affect themselves or their offspring.

Genotype

The sum total of all the genes a person inherits.

Genotype-Environment Correlations

The processes by which genetic factors contribute to variations in the environment.

Genotype-Environment Interactions

Involve genetic susceptibility to the environment.

Giftedness

Refers to children who have an IQ of 130 or higher.

Glass ceiling

Refers to organizational discrimination in the workplace that limits the career advancement of women.

Glaucoma

The loss of peripheral vision, frequently due to a buildup of fluid in eye that damages the optic nerve.

Goodness-of-Fit

A caregiver's and child's styles match and communication and interaction can flow.

Gray Matter

Regions of the brain that contain the cell bodies.

Grief

The normal process of reacting to a loss. It can be in response to a physical loss, such as a death, or a social loss including a relationship or job.

Gross motor skills

Focus on large muscle groups that control our head, torso, arms and legs and involve larger movements (e.g., balancing, running, and jumping).

Habituation Procedures

Measuring decreased responsiveness to a stimulus after repeated presentations.

Heteronormative

The United States is heteronormative, meaning that society supports heterosexuality as the norm.

Heterosexuality

Attraction to individuals of the opposite sex/gender.

Holophrasic Speech

One word expressions.

Homogamy

Refers to marriage between people who share social characteristics.

Homophily

Adolescents who are similar to one another choose to spend time together in a “birds of a feather flock together” way.

Homophobia

Encompasses a range of negative attitudes and feelings toward homosexuality or people who are identified or perceived as being lesbian, gay, bisexual, or transgender (LGBT).

Homosexuality

Attraction to individuals of one's own sex/gender.

Hookups

Involve uncommitted sexual encounters.

Hormonal Stress Theory or Neuroendocrine Theory of Aging

Suggests that as we age the ability of the hypothalamus to regulate hormones in the body begins to decline leading to metabolic problems

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.

Hot flash

A surge of adrenaline that can awaken the brain from sleep.

Human sexuality

Refers to people's sexual interest in and attraction to others, as well as their capacity to have erotic experiences and responses.

Hypertension

A condition in which the pressure against the wall of the arteries becomes too high.

Hypothalamus

The small area at the base of the brain consisting of several groups of nerve-cell bodies that receives input from the limbic system.

Hypotheses

Specific statements about the relationship between variables.

Hypothetical-deductive reasoning

Developing hypotheses based on what might logically occur.

Identity achievement

Identity achievement refers to those who after exploration have made a commitment.

Identity diffusion

A status that characterizes those who have neither explored the options, nor made a commitment to an identity.

Identity foreclosure

Those in identity foreclosure have made a commitment to an identity without having explored the options.

Identity moratorium

A status that describes those who are activity exploring in an attempt to establish an identity, but have yet to have made any commitment.

Imaginary audience

The adolescent's belief that those around them are as concerned and focused on their appearance as they themselves are.

In vitro fertilization (IVF)

A procedure that involves removing eggs from the female and fertilizing the eggs outside the woman's body.

Incest

Refers to sexual contact between a child and family members.

Incomplete dominance

The dominant gene does not completely suppress the recessive gene.

Independent variable

In an experiment, is the causing variable that is created or manipulated by the experimenter.

Induced Birth

Delivered before labor begins.

Inductive Reasoning

A logical process in which multiple premises believed to be true are combined to obtain a specific conclusion.

Infant-directed Speech

Involves exaggerating the vowel and consonant sounds, using a high-pitched voice, and delivering the phrase with great facial expression.

Infantile amnesia

Refers to the inability to recall memories from the first few years of life.

Information Processing

Based on the ideas and research of several cognitive scientists studying how individuals perceive, analyze, manipulate, use, and remember information.

Informed consent

Explains as much as possible about the true nature of the study, particularly everything that might be expected to influence willingness to participate.

Inhibition theory

Argues that older adults have difficulty with inhibitory functioning, or the ability to focus on certain information while suppressing attention to less pertinent information tasks.

Innate immune system

The innate immune system is made up of the skin, mucous membranes, cough reflex, stomach acid, and specialized cells that alert the body of an impending threat.

Insomnia

Having trouble falling asleep and staying asleep.

Intelligence Quotient (IQ)

A measure of intelligence that is adjusted for age.

Interview

Involves being directly questioned by a researcher.

Intimacy

Involves the ability the share feelings, personal thoughts and psychological closeness with the other.

Introspection

Thinking about one's thoughts.

Intuitive thought

Automatic, unconscious, and fast.

Intuitive Thought Substage

Lasting from 4 to 7 years, this substage is marked by greater dependence on intuitive thinking rather than just perception.

Kinkeeper

A person or persons who keep the family connected and who promote solidarity and continuity in the family.

Klinefelter Syndrome (XXY)

Results when an extra X chromosome is present in the cells of a male.

Knowledge base

Refers to knowledge in particular areas that makes learning new information easier.

Kwashiorkor

A form of severe protein malnutrition.

Kyphosis

As bones weaken in the spine, adults gradually lose height and their posture becomes hunched over, which is called kyphosis.

Laboratory observation

Conducted in a setting created by the researcher.

Language

A system of communication that uses symbols in a regular way to create meaning.

Lateralization

The process in which different functions become localized primarily on one side of the brain.

Learning Disability

A specific impairment of academic learning that interferes with a specific aspect of schoolwork and that reduces a student's academic performance significantly.

Learning Theory

Also known as Behaviorism, is based on the premise that it is not possible to objectively study the mind, and therefore psychologists should limit their attention to the study of behavior itself.

Leisure

Time off from work and duties.

Libido

Sexual motivation, often referred to as libido, is a person's overall sexual drive or desire for sexual activity.

Life expectancy

The predicted number of years a person born in a particular time period can reasonably expect to live.

Lifespan

The length of time a species can exist under the most optimal conditions.

Limbic system

Regulates emotion and reward.

Linked lives

The notion that people in important relationships, such as children and parents, mutually influence each other's developmental pathways.

Living wills

Written or video statements that outline the health care initiates the person wishes under certain circumstances.

Longitudinal research

Involves studying a group of people who are the same age, and measuring them repeatedly over a period-of-time.

Loss orientation

Emphasizes the feelings of loss and yearning for the deceased.

Low birth weight

A child is considered low birth weight if he or she weighs less than 5 pounds 8 ounces.

Luteinizing hormone (LH)

Triggers the release of a mature egg in females during the process of ovulation.

Macrosystem

Includes the cultural elements, such as global economic conditions, war, technological trends, values, philosophies, and a society's responses to the global community.

Major Neurocognitive Disorder

Diagnosed as a significant cognitive decline from a previous level of performance in one or more cognitive domains and interferes with independent functioning.

MAMA cycling

Moving back and forth between moratorium and achievement.

Marasmus

Infantile marasmus refers to starvation due to a lack of calories and protein.

Maternal immune hypothesis

Proposes a progressive immunization to male-specific antigens after the birth of successive sons in some mothers, which increases the effect of anti-male antibodies on the sexual differentiation of the brain in the developing fetus.

Maudsley Approach

The Maudsley Approach has parents of adolescents with anorexia nervosa be actively involved their child's treatment, such as assuming responsibility for feeding the child.

Mechanics of intelligence

Are dependent on brain functioning and decline with age, similar to fluid intelligence.

Mediation deficiency

Occurs when a child does not grasp the strategy being taught, and thus, does not benefit from its use.

Medical orders

Medical orders are crafted by a medical professional on behalf of a seriously ill patient.

Meiosis

The gamete's chromosomes duplicate, and then divide twice resulting in four cells containing only half the genetic material of the original gamete.

Menarche

The first menstrual period.

Menopause

Defined as 12 months without menstruation.

Mental age

The age at which a person is performing intellectually.

Mere exposure

The tendency to prefer stimuli (including, but not limited to people) that we have seen more frequently.

Mesosystem

Includes the larger organizational structures, such as school, the family, or religion.

Metabolic stress

The life sustaining activities of the body, such as circulating the blood, eliminating waste, controlling body temperature, and neuronal firing in the brain.

Metabolic Syndrome

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.

Metabolism

The process by which the body converts food and drink into energy.

Metacognition

Refers to the knowledge we have about our own thinking and our ability to use this awareness to regulate our own cognitive processes.

Microsystem

Includes the individual's setting and those who have direct, significant contact with the person, such as parents or siblings.

Minor Neurocognitive Disorder

Diagnosed as a modest cognitive decline from a previous level of performance in one of more cognitive domains and does not interfere with independent functioning.

Mitochondria

A cell organelle that uses oxygen to produce energy from food.

Mitosis

The cell's nucleus making an exact copy of all the chromosomes and splitting into two new cells.

Monozygotic

Monozygotic or identical twins occur when a fertilized egg splits apart in the first two weeks of development.

Morpheme

A string of one or more phonemes that makes up the smallest units of meaning in a language.

Motor skills

Refer to our ability to move our bodies and manipulate objects.

Mourning

The process by which people adapt to a loss.

Multiracial

Whose parents come from two or more ethnic or racial groups.

Myelin

A coating of fatty tissues around the axon of the neuron.

Naturalistic observation

Psychologists observe and record behavior that occurs in everyday settings.

Nature

Heredity plays the most important role in bringing about that feature.

NEETs

Refers to being neither employed nor in education or training.

Negative correlation

Occurs when high values for one variable tend to be associated with low values for the other variable.

Neo-Piagetians

Theorists who provide "new" interpretations of Piaget's theory.

Neonatal Abstinence Syndrome

If a baby's mother used an addictive drug during pregnancy that baby can get addicted to the drug before birth and go through drug withdrawal after birth, also known as Neonatal Abstinence Syndrome.

Neurogenesis

The formation of neurons.

Neuroplasticity

Refers to the brain's ability to change, both physically and chemically, to enhance its adaptability to environmental change and compensate for injury.

Non-declarative memories

Sometimes referred to as implicit memories, they are typically automated skills that do not require conscious recollection.

Non-organic failure to thrive

The diagnosis for an infant who does not grow, develop, or gain weight on schedule.

Normal Distribution (or bell curve)

The pattern of scores usually observed in a variable that clusters around its average.

Novice

Someone who has limited experiences with a particular task.

Nurture

One's environment is most significant in shaping the way we are.

Obese

Children who are at or above the 95th percentile are considered obese.

Object permanence

The understanding that even if something is out of sight, it still exists.

Oblivobesity

The lack of recognition from parents that children are overweight or obese.

Occipital lobe

is at the very back of the skull and processes visual information.

Occupational sexism

Involves discriminatory practices, statements, or actions, based on a person's sex, that occur in the workplace.

Operational

Refers to logical manipulation of information.

Orgasm

The release of tension.

Osteoporosis

A disease that thins and weakens bones to the point that they become fragile and break easily.

Overextension

Believing that a label applies to all objects that are similar to the original object.

Overweight

Children's whose BMI is at or above the 85th percentile for their age are considered overweight.

Oxytocin

Facilitates bonding and makes social connections more rewarding.

Palliative care

Focuses on providing comfort and relief from physical and

emotional pain to patients throughout their illness, even while being treated.

Palmer Grasp

At about 4 months of age grasping an object involves the use of the fingers and palm, but no thumbs. This is known as the Palmer Grasp.

Pansexuality

Refers to attraction to all sexes/genders.

Parietal lobe

Extends from the middle to the back of the skull and which is responsible primarily for processing information about touch.

Parkinson's disease

Characterized by motor tremors, loss of balance, poor coordination, rigidity, and difficulty moving.

Passion

Refers to the intense, physical attraction partners feel toward one another.

Passive euthanasia

Occurs when life-sustaining support is withdrawn.

Passive genotype-environment correlation

Occurs when children passively inherit the genes and the environments their family provides.

Pearson Correlation Coefficient

Symbolized by the letter r, is the most common statistical measure of the strength of linear relationships among variables.

Pelvic Inflammatory Disease (PID)

An infection of a woman's reproductive organs.

Perimenopause

Refers to a period of transition in which a woman's ovaries stop releasing eggs and the level of estrogen and progesterone production decreases.

Periodic limb movement disorder

Causes people to jerk and kick their legs every 20 to 40 seconds during sleep.

Permissive

Permissive parenting involves holding expectations of children that are below what could be reasonably expected from them.

Personal fable

The belief that one is unique, special, and invulnerable to harm.

Personality

Refers to an individual's consistent pattern of feeling, thinking, and behaving.

Phenotype

The features that are actually expressed.

Phoneme

The smallest unit of sound that makes a meaningful difference in a language.

Phonological loop

Maintains information about auditory stimuli.

Physical domain

Includes changes in height and weight, sensory capabilities, the nervous system, as well as the propensity for disease and illness.

Physician-assisted suicide

A form of active euthanasia whereby a physician prescribes the means by which a person can die.

Pincer Grasp

The 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. Now the infant uses a Pincer Grasp.

Placenta

A structure connected to the uterus that provides nourishment and oxygen from the mother to the developing embryo via the umbilical cord.

Placenta abruption

Occurs when a placenta separates prematurely from the uterine wall.

Placenta previa

Occurs when a placenta lies low in the uterus and covers all or part of the cervix.

Plasticity

Our ability to change and that many of our characteristics are malleable.

Plateau phase

The period of sexual excitement with increased heart rate and circulation that sets the stage for orgasm.

Plus 50 Initiative

Assists community college in creating or expanding programs that focus on workforce training and new careers for the plus-50 population.

Polygenic

The result of several genes.

Polysexuality

Refers to attraction to multiple sexes/genders, respectively.

Population

All the people that the researcher wishes to know about.

Positive correlation

When the straight line indicates that individuals who have high values for one variable also tend to have high values for the other variable.

Postconventional moral development

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.

Postformal Thought

Adults are not as influenced by what others think: this advanced type of thinking is referred to as Postformal Thought.

Practical Intelligence

Refers to the ability to demonstrate common sense and street-smarts.

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.

Pragmatics

How we communicate effectively and appropriately with others.

Pragmatics of intelligence

Cultural exposure to facts and procedures that are maintained as one ages and are similar to crystalized intelligence.

Preconventional morality

Focuses on self-interest.

Preeclampsia

Also known as Toxemia, preeclampsia is characterized by a sharp rise in blood pressure, a leakage of protein into the urine

as a result of kidney problems, and swelling of the hands, feet, and face during the third trimester of pregnancy.

Preformationism

The belief that a tiny, fully formed human is implanted in the sperm or egg at conception and then grows in size until birth.

Prefrontal cortex

Involved in the control of impulses, organization, planning, and making good decisions.

Preoperational Stage

In the preoperational stage, children use symbols to represent words, images, and ideas, which is why children in this stage engage in pretend play.

Presbycusis

A common form of hearing loss in late adulthood that results in a gradual loss of hearing.

Presbyosmia

A loss of smell due to aging.

Preterm

A baby born at less than 37 weeks gestation.

Primary aging

Biological factors, such as molecular and cellular changes, and oxidative damage are called primary aging.

Primary sexual characteristics

Changes in the reproductive organs.

Priming

Changes in behavior as a result of frequent or recent experiences.

Private Speech

Inner speech.

Problem-focused coping

Problem-focused coping is thought of as actively addressing the event that is causing stress in an effort to solve the issue at hand.

Processing speed theory

Suggests that as the nervous system slows with advanced age our ability to process information declines.

Production deficiency

In a production deficiency the child does not spontaneously use a memory strategy, and has to be prompted to do so.

Programmed Theories

Follow a biological timetable, possibly a continuation of childhood development.

Prospective memory

Refers to remembering things we need to do in the future.

Proximity

The extent to which people are physically near us.

Proximodistal

From the midline outward.

Proximodistal development

Growth from the midline outward.

Psychological age

Our psychologically adaptive capacity compared to others of our chronological age.

Psychological moratorium

During adolescence we experience psychological moratorium, where teens put on hold commitment to an identity while exploring the options.

Psychophysiological Assessment

Researchers may record psychophysiological data, such as measures of heart rate, hormone levels, or brain activity to help explain development.

Psychosocial crises

Each period of life has a unique challenge or crisis that the person who reaches it must face.

Psychosocial domain

Focuses on changes in emotion, self- perception and interpersonal relationships with families, peers, and friends.

Puberty

A period of rapid growth and sexual maturation.

Q-sort technique

A large number of behaviors are recorded on cards and the observer sorts the cards in a way that reflects the type of behavior that occurs within the situation.

Rapid eye movement sleep behavior disorder

Occurs when one's muscles can move during REM sleep and sleep is disrupted.

Reactive Attachment Disorder

Those children experiencing neglectful situations and also displaying markedly disturbed and developmentally inappropriate attachment behavior, such as being inhibited and withdrawn, minimal social and emotional responsiveness to others, and limited positive affect, may be diagnosed with Reactive Attachment Disorder.

Receptive language

When an infant understands more than he or she can say.

Recessive genes

Express themselves only when paired with a similar version gene.

Reciprocal determinism

There is interplay between our personality and the way we interpret events and how they influence us.

Reflexes

Involuntary movements in response to stimulation.

Reliable

Consistent over time.

Religiosity

Refers to engaging with a formal religious group's doctrines, values, traditions, and co-members.

Representative sample

Would include the same percentages of males, females, age groups, ethnic groups, and socio-economic groups as the larger population.

Research design

The specific method a researcher uses to collect, analyze, and interpret data.

Resiliency

Being able to overcome challenges and successfully adapt.

Resolution period

The unaroused state before the cycle begins again.

Respiratory distress syndrome

Characterized by weak and irregular breathing.

Response inhibition

The ability to stop a behavior that has already begun.

Response initiation

The ability to not initiate a behavior before you have evaluated all of the information.

Restless legs syndrome

Feels like there is tingling, crawling, or pins and needles in one or both legs, and this feeling is worse at night.

Restoration orientation

Centers on the grieving individual reestablishing roles and activities they had prior to the death of their loved one.

Rh disease

A form of anemia.

Rheumatoid arthritis (RA)

An inflammatory disease that causes pain, swelling, stiffness, and loss of function in the joints.

Sample

The people chosen to participate in the research.

Sandwich generation

Refers to adults who have at least one parent age 65 or older and are either raising their own children or providing support for their grown children.

Sarcopenia

The loss of muscle mass and strength that occurs with aging.

Scaffolding

The temporary support that parents or teachers give a child to do a task.

Scaffolding Theory of Aging and Cognition

States that the brain adapts to neural atrophy (dying of brain cells) by building alternative connections, referred to as scaffolding.

Schema

A framework for organizing information.

Scotopic sensitivity

The ability to see in dimmer light.

Secondary aging

Aging that occurs due to controllable factors, such as an unhealthy lifestyle including lack of physical exercise and poor diet.

Secondary sexual characteristics

Visible physical changes not directly linked to reproduction, but signal sexual maturity.

Secondary/Content Analysis

Involves analyzing information that has already been collected or examining documents or media to uncover attitudes, practices or preferences.

Secure base

A parental presence that gives the child a sense of safety as the child explores the surroundings.

Selective attention

Refers to our ability to focus on a single task or stimulus, while ignoring distracting information.

Selective optimization with compensation

Used when the elder makes adjustments, as needed, in order to continue living as independently and actively as possible.

Self-awareness

The realization that you are separate from others.

Self-concept

Our self-description according to various categories, such as our external and internal qualities.

Self-conscious emotions

Envy, pride, shame, guilt, doubt, and embarrassment.

Self-disclosure

The tendency to communicate frequently, without fear of reprisal, and in an accepting and empathetic manner.

Self-efficacy

Refers to the belief that you are capable of carrying out a specific task or of reaching a specific goal.

Self-esteem

An evaluative judgment about who we are.

Self-fulfilling prophecy

Refers to the tendency to act in such a way as to make what you predict will happen, will come true.

Self-regulation

The ability to control impulses.

Semantic memories

Memories for facts and knowledge that are not tied to a timeline.

Semantics

Refers to the set of rules we use to obtain meaning from morphemes.

Sensorimotor Period

The first stage of cognitive development.

Sensory memory

Also called the sensory register, it is the first stage of the memory system, and it stores sensory input in its raw form for a very brief duration; essentially long enough for the brain to register and start processing the information.

Separation anxiety

Fearing the departure of significant others.

Sequential research

Includes elements of both longitudinal and cross-sectional research designs.

Sex

Refers to physical or physiological differences between males, females, and intersex persons, including both their primary and secondary sex characteristics.

Sex-linked

The defective gene is found on the X-chromosome.

Sexism or gender discrimination

Prejudice or discrimination based on a person's sex or gender.

Sexual abuse

Childhood sexual abuse is defined as any sexual contact between a child and an adult or a much older child.

Sexual orientation

A person's emotional and sexual attraction to a particular sex or gender.

Sexual response cycle

A model that describes the physiological responses that take place during sexual activity.

Sexually transmitted infections (STIs)

Illnesses that have a significant probability of transmission by means of sexual behavior, including vaginal intercourse, anal sex, and oral sex.

Shingles

A disease that affects your nerves.

Sleep apnea

Refers to repeated short pauses in breathing, while an individual sleeps, that can lead to reduced oxygen in the blood.

Small-for-date

Infants that have birth weights that are below expectation based on their gestational age.

Social age

Based on the social norms of our culture and the expectations our culture has for people of our age group.

Social death

Occurs when others begin to dehumanize and withdraw from someone who is terminally ill or has been diagnosed with a terminal illness.

Social desirability

Respondents may lie because they want to present themselves in the most favorable light.

Social integration

A concept used to describe the number of social roles that you have.

Social Learning Theory

States that our actions are learned by watching others.

Social referencing

Refers to the process whereby infants seek out information from others to clarify a situation and then use that information to act.

Sociocultural theory

Emphasizes the importance of culture and interaction in the development of cognitive abilities.

Socioeconomic status (SES)

A way to identify families and households based on their shared levels of education, income, and occupation.

Socioemotional Selectivity Theory

Focuses on changes in motivation for actively seeking social contact with others.

Sociometric assessment

Measures attraction between members of a group.

Specific Intelligence (s)

A measure of specific skills in narrow domains.

Spermarche

First ejaculation of semen.

Spirituality

Refers to an individual's intrapsychic sense of connection with something transcendent (that which exists apart from an not limited by the material universe) and the subsequent feelings of awe, gratitude, compassion, and forgiveness.

Stage theories or discontinuous development

Assume that developmental change often occurs in distinct stages that are qualitatively different from each other, and in a set, universal sequence.

Standardization

The standardization of a test involves giving it to a large number of people at different ages and computing the average score on the test at each age level.

Status dropout rate

Refers to the percentage of 16 to 24 year-olds who are not enrolled in school and do not have high school credentials.

Stereotype threat

Being the target of stereotypes can adversely affect individuals' performance on tasks because they worry they will confirm the cultural stereotypes. This is known as stereotype threat.

Stranger Anxiety

A fear of unfamiliar people.

Stranger wariness

Fearing the presence of a stranger.

Stress

Pattern of physical and psychological responses in an organism after it perceives a a threatening event that disturbs its homeostasis and taxes its abilities to cope with the event.

Stressor

A stimulus that had this effect on the body (that is, causing stress).

Stuttering

A speech disorder in which sounds, syllables, or words are repeated or last longer than normal.

Sudden Infant Death Syndrome (SIDS)

Identified when the death of a healthy infant occurs suddenly and unexpectedly, and medical and forensic investigation findings (including an autopsy) are inconclusive.

Surface structure

The surface structure of an idea refers to how the idea is expressed in any one language.

Survey

A measure administered through either a verbal or written questionnaire to get a picture of the beliefs or behaviors of a sample of people of interest.

Sustained attention

The ability to stay on task for long periods of time.

Symbolic Function Substage

Occurs between 2 and 4 years of age and is characterized by the child being able to mentally represent an object that is not present and a dependence on perception in problem solving.

Synaptic Blooming

Period of rapid neural growth.

Synaptic Pruning

Neural connections are reduced thereby making those that are used much stronger.

Synaptogenesis

The formation of connections between neurons.

Syntax

The set of rules of a language by which we construct sentences.

Systolic pressure

The pressure in the blood vessels when the heart beats.

Tabula Rosa

Blank slate.

Tacit knowledge

Knowledge that is pragmatic or practical and learned through experience rather than explicitly taught.

Telegraphic Speech/Text Message Speech

Occurs when unnecessary words are not used.

Telomere

At the end of each chromosomal strand is a sequence of DNA that does not code for any particular protein, but protects the rest of the chromosome, which is called a telomere.

Temperament

The innate characteristics of the infant, including mood, activity level, and emotional reactivity, noticeable soon after birth.

Temporal lobe

The temporal lobe is between the ears and responsible for hearing and language.

Teratogens

Environmental factors that can contribute to birth defects, including some maternal diseases, pollutants, drugs and alcohol.

Teratology

The study of factors that contribute to birth defects.

The Lamaze Method

The emphasis of this method is on teaching the woman to be in control in the process of delivery.

The Strange Situation Technique

Conducted in a context that is unfamiliar to the child and therefore likely to heighten the child's need for his or her parent.

Theory of mind

Refers to the ability to think about other people's thoughts.

Theory-Theory

The tendency of children to generate theories to explain everything they encounter.

Third variable

A variable that is not part of the research hypothesis but produces the observed correlation between them.

Time-based prospective memories

Having to remember to do something at a future time.

Tinnitus

A ringing, hissing, or roaring sound in the ears.

Tip-of-the-tongue (TOT)

Experiencing tip-of-the-tongue (TOT) events refers to experiencing "blocks" at retrieving information that we know.

Transductive

Children's reasoning is typically Transductive, that is, making faulty inferences from one specific example to another.

Transgender

Those who identify with a role that is different from their biological sex (for example, they were born with male sex characteristics, were assigned as a boy, but identify today as a girl, woman, or some other gender altogether) are often referred to as transgender.

Transitivity

The concept of transitivity means that 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.

Transvestite

The practice of dressing and acting in a style or manner traditionally associated with another sex.

Triarchic Theory of Intelligence

Proposes that people may display more or less analytical intelligence, creative intelligence, and practical intelligence.

Trisomy 21 or Down Syndrome

Occurs when there are three rather than two 21st chromosomes.

Trophoblast

The outer group of cells, or trophoblast, becomes the support system which nourishes the developing organism.

Turner Syndrome

Occurs when part or all of one of the X chromosomes is lost and the resulting zygote has an XO composition.

Two-spirit

A modern umbrella term used by some indigenous North Americans to describe gender-variant individuals in their communities.

Underextension

Believing that a word can be used for only a particular object.

Uninvolved

Uninvolved parents are disengaged from their children. They do not make demands on their children and are non-responsive.

Utilization deficiency

Refers to a child using an appropriate strategy, but it fails to aid their performance.

Validity

Measures what it is supposed to measure rather than something else.

Variable

Anything that changes in value.

Visuospatial sketchpad

Maintains information about visual stimuli.

Voice disorders

Involve problems with pitch, loudness, and quality of the voice.

Wechsler Adult lntelligence Scale (WAIS)

The most widely used intelligence test for adults.

Wernicke's area

An area of the brain next to the auditory cortex that is responsible for language comprehension.

White Matter

The axons that form the neural pathways.

Widowhood mortality effect

Refers to the higher risk of death after the death of a spouse.

Wisdom

The ability to use the accumulated knowledge about practical matters that allows for sound judgment and decision making.

Working memory

The second stage of the memory system.

Zone of Proximal Development (ZPD)

Occurs when children can almost perform a task, but not quite on their own without assistance.

Zygote

a cell containing the combined genetic information from both parents.

Zygote intra-fallopian tube transfer (ZIFT)

A 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.