often associated with delinquent behavior, attention deficit hyperactivity disorder, and depression. Bullies were also more likely to assume that others wanted to harm them, even when the assumption had no basis.

Is there a cure for bullying? School systems and families have a stake in controlling it. Setting strict limits on bullies can sometimes help. Yet, much bullying—if not most—goes unreported. Some children do not report bullying because they are embarrassed. Other children do not report bullying because they fear retaliation. Many children simply learn to accommodate or avoid bullies until they are out of school.

A short film released in 2008, *Stories of Us: Bullying*, gives teachers a tool for talking about the subject in a way that kids can respond to. Middle school students in Champaign, Illinois acted in the film and played major roles in writing the script. The students who contributed ideas and dialogue for the script quickly realized that they had been guilty of many similar acts—starting rumors and gossiping, cyberbullying, intimidation, and so on. Because of the students' input, the film has a realistic quality and a powerful message.

The subjects of bullying and development are intertwined in a number of ways. Bigger, more physically developed children often bully younger, smaller kids. Bullies, as you read, often come from homes where their social development has been damaged by violence. In addition, bullying can destroy victims' self-esteem at a time when children need positive interactions the most.

What do you think?

1. How does bullying affect students and the school atmosphere?
2. Does bullying occur in your school? What can school officials, parents, and students do to limit or stop it?

CHAPTER 10
INFANCY AND CHILDHOOD

Chapter at a Glance

SECTION 1: Developmental Psychology

- Developmental psychology is the study of how people grow and change throughout their lives.
- Developmental psychologists are concerned with many issues. One issue is the extent to which heredity (nature) and environment (nurture) affect development. Another is whether people develop in distinct stages or whether development is more gradual and steady.

SECTION 2: Physical Development

- Children grow physically from the time they are conceived through infancy and childhood.
- Reflexes, motor development, and perceptual development are all important aspects of physical development.

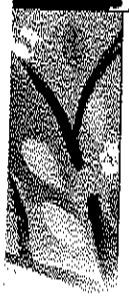
SECTION 3: Social Development

- Through the process of social development, infants and children learn to relate to other people.
- Attachment bonds infants and children to those close to them, and the quality of this attachment affects how they develop.
- Parenting styles cover a wide range, but some styles are more likely to produce well-adjusted children who place a high value on themselves. The value one places on one's self is called self-esteem.

SECTION 4: Cognitive Development

- Cognitive development is the development of people's thought processes.
- The psychologist Jean Piaget divided cognitive development into four stages: the sensorimotor stage, the preoperational stage, the concrete-operational stage, and the formal-operational stage.
- The psychologist Lawrence Kohlberg's theory of moral development has three stages: the preconventional level, the conventional level, and the postconventional level. Each of these three levels is further divided into two levels.

SECTION 1



Developmental Psychology

Before You Read

Main Idea
The field of developmental psychology examines physical, social, and cognitive development. Heredity and environment control different aspects of development to varying degrees.

Reading Focus
1. Why and how do psychologists study development?
2. How do both heredity and environment contribute to the development process?
3. How would you describe development as a process of stages versus continuity?

Vocabulary
developmental psychology
maturation
critical period

TAKING NOTES Use a graphic organizer like this one to take notes on developmental psychology.

Developmental Psychology		

Sun, Sand, and Psychology

PSYCHOLOGY CLOSE UP

What can you learn about developmental psychology at the beach?

A day at the beach—what a fine opportunity to get some sun, relax, have a swim, and observe human development. It may sound strange, but people-watching at the beach is the perfect way to survey human development. As you sit on your towel, you notice a family to your right. A baby wakes, crying. Mom picks her up, gives her a bottle and a snuggle, and the baby is totally content. Nearby, Dad watches over their 5-year-old son. The two construct a sand castle. The boy's castle wall repeatedly falls over, and he begins to whimper. "I can't do it—I can't do anything right," he says. Dad offers encouragement and helps rebuild the wall. To your left, a group of teenagers plays volleyball. A boy and girl sit apart from the group and have an intimate talk. Another boy about their age walks past, looking lonely and clearly longing to join in.

What signs of development do these people show? The infant simply shows a need for comfort and nourishment. Her brother shows a desire to accomplish things, but doubts his abilities. Mom and Dad try to act in their children's best interests and make sacrifices for them. The teenagers develop close relationships—both friendly and romantic. But the one boy is struggling to find his place among his peers. As people grow older, they steadily develop and their lives become richer and more complex.

The Study of Development

Developmental psychology is the field in which psychologists study how people grow and change throughout the life span—from conception, through infancy, childhood, adolescence, and adulthood, and until death. Psychologists are interested in studying the two stages discussed in this chapter—infancy and childhood—for many reasons. One is that early childhood experiences affect people as adolescents and adults. Another is that by studying early stages of development, psychologists can learn about developmental problems, what causes them, and how to treat them. For example, why do some children have low self-esteem? Psychologists can also learn about what types of experiences in infancy and childhood foster healthy and well-adjusted children and adults.

Studying development is also interesting in and of itself. Developmental psychologists study not only people of different ages but also different types of development. These include physical development, social development, and cognitive development.

Because developmental psychologists study people across the life span, they are interested in seeing how people change over time. Psychologists use two methods to study change: the longitudinal method and the cross-sectional method.

Using the longitudinal method, developmental researchers select a group of participants and then observe that same group for a period of time, often years or even decades. The advantage of a longitudinal study lies in being able to observe, compare, and contrast the behaviors of each individual participant over time, as he or she matures and changes. The longer period of time needed for these studies is both a benefit and a drawback. Over time, some subjects may withdraw from the study for any number of reasons. Another possible drawback is that simply being part of a study over a number of years may affect or alter participants' behaviors.

The cross-sectional method eliminates some of the problems of the longitudinal method. In cross-sectional studies, researchers select a sample that includes people of different ages (rather than following individuals as they pass through those age groups). They then compare the participants in the different age groups. This type of study is less time-consuming (and also less expensive), but as with the longitudinal method, some advantages come with built-in drawbacks. The fact that individuals are born at different points in time introduces the possibility that they might have grown up with different educational methods, medical treatments, and cultural influences.

Reading Check **Draw Conclusions** What are two reasons that psychologists are interested in studying infancy and childhood?

Heredity and Environment

Developmental psychologists are concerned with two general issues. The first involves the ways in which heredity and environmental influences contribute to human development. The second issue involves whether development occurs gradually or in stages.

Psychologists have long debated the extent to which human behavior is determined by heredity (nature) or environment (nurture). This debate has been particularly relevant to the study of development. Some aspects of behavior originate in the genes people inherit from their parents. In other words, certain kinds of behavior are biologically "programmed" to develop as long as children receive adequate nutrition and social experience. Researchers use kinship studies, including studies of twins separated at birth, to try to gauge the importance of heredity and environment on human development.

In the field of human development, heredity manifests itself primarily in the process called maturation. **Maturation** is the automatic and sequential process of development that results from genetic signals. For instance, because of maturation, infants generally sit up before they crawl, crawl before they stand, and stand before they walk. This sequence happens automatically and on its own genetically determined timetable. Each infant has his or her own timetable, and there is a wide range of what is considered "normal" when it comes to reaching stages within the sequence. No matter how much one might try to teach these skills to infants, they will not do these things until they are "ready."

Nature, Nurture, and Feral Children

A Chilean boy, Axel Rivas, shows a painting of the pack of dogs with whom he lived. "They are my family," he told authorities. Stories of children living wild and raised by animals have always fascinated people. These stories challenge basic ideas of humanity. Are we born human, or are we made human? ***How do feral children fit into the heredity versus environment debate?***

This concept of "readiness" relates to an important term in the study of development: critical period. A **critical period** is a stage or point in development during which a person is best suited to learn a particular skill or behavior pattern. For example, much research suggests that there may be a critical period for language development in humans. Young children seem to learn language more easily than older children and adults.

Psychologist Arnold Gesell (1880–1961) proposed that maturation played the most important role in development. He focused on many areas of development, including physical and social development. Behavioral psychologists, such as John Watson, took a different view from Gesell's. Behaviorism originated in the 1600s with English philosopher John Locke, who believed that the mind of the infant is like a *tabula rasa* (Latin for "blank slate"). That is, when an infant is born, her or his mind is like a blank slate—a clean blackboard—on which the infant's experiences will be written. In this view, nurture, or the environment, will have the greatest effect on the newborn's development.

Watson and other behaviorists presented environmental explanations for behavior. They thought that the influence of nurture was much stronger than that of nature. The influences of nurture, or the environment, are found in factors such as nutrition, family background, culture, and learning experiences in the home, community, and school.

Today nearly all psychologists would agree that both nature and nurture play key roles in children's development. For example, while few psychologists today believe that maturation plays the major role in *all* areas of development, they certainly think it is central in some, such as physical development and motor development.

Reading Check **Summarize** Name and describe three major issues that are part of the heredity versus environment debate.

Stages Versus Continuity

Another topic of debate among psychologists is whether human development occurs primarily in stages or as a continuous process. In other words, is development like climbing a set of stairs to reach the top (each stair being a distinct level), or is it like walking up an inclined plane or hill (a gradual increase up to the top, without distinct levels)?

A stage, like one step in a staircase, is a period or a level in the development process that is distinct from other levels. Certain aspects of physical development appear to take place in stages. For example, young children go through sitting, crawling, standing, and walking stages—in that order. When people move from one stage to another, their bodies and behavior can change dramatically.

Maturational theorists, such as Gesell, generally believe that most development occurs in stages. Rapid changes usher in dramatically new kinds of behavior, causing entry into the next stage. For instance, when an infant's legs become strong enough to support him or her, the infant stands and soon begins to walk. A new stage of life has begun, and the child changes from infant to toddler.

Jean Piaget is one of the most famous stage theorists. His field was cognitive development. As a young researcher working on intelligence testing, he noticed patterns in children's thinking that led him to a lifelong study of how children think. His studies led him to conclude that everyone develops in the same way, through four stages. Different children reach stages at different times, but everyone goes through the stages in the same order. Erik Erikson is another well-known stage theorist. He focused on the role of social relationships in the development of the personality. Erikson believed people pass through eight stages in the healthy development of their personalities, and that each stage was a task to be mastered before moving on.

Not all psychologists, however, agree that development occurs in stages. For example, J. H. Flavell and his colleagues argue that cognitive development is a gradual process. According to Flavell, cognitive development is an example of continuous development, which, like walking up a slope, happens gradually. For instance, the effects of learning cause gradual changes, such as the improvement over time in a child's ability to walk or the addition of new words to a child's vocabulary.

Continuous development can occur almost unnoticed. A child's steady growth in weight and height from the ages of about 2 to 11 years is an example of continuous development that happens so gradually we usually are not aware of the changes as they are occurring.

Development in Stages

Stages Theories based on the existence of stages hold that development occurs in a predetermined sequence of steps. One cannot jump or skip steps, and everyone takes the steps in the same order. For example, Jean Piaget theorized that children are able to understand certain things between the ages of 2 and 7 but move on to a whole new knowledge set between 7 and 12. Piaget's theory sees cognitive development as a result of preprogrammed heredity.

Continuous Development

Continuity Theories based on the idea of continuity hold that stages of development do not exist. For example, behaviorists, such as John Watson, believe that children pick up knowledge constantly through observation and learning. Each new bit of acquired knowledge builds upon what is learned before. Behaviorist theories, therefore, stress the importance of environment over that of heredity in cognitive development.

However, it is not always clear whether development occurs in stages or in a steady progression. Psychologists continue to debate the issue.

Reading Check **Recall** Which mode of development (stages or continuity) is more aligned with heredity, and which is more aligned with environment?

SECTION 1 Assessment

Reviewing Main Ideas and Vocabulary

1. **Recall** What is meant by the term *critical period*?
2. **Describe** Is maturation a product of heredity or environment? Why?
3. **Summarize** How do stage theorists think that people develop?

Thinking Critically

4. **Contrast** Explain how longitudinal and cross-sectional studies are different.
5. **Explain** Which element, nature or nurture, do behaviorists such as John Watson believe most influence development? Explain.
6. **Analyze** Using your notes and a graphic organizer like the one below, explain how heredity and stages are related and how environment and continuity are related.

Heredity	Stages	Environment	Continuity

FOCUS ON WRITING

7. **Expository** What do you think is a more powerful influence on how people develop: heredity or environment? Write two paragraphs explaining your view and include at least two examples from real life that back up your view.

SECTION 2

Physical Development

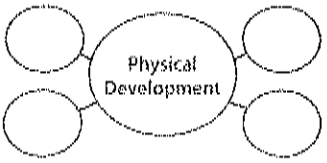
Before You Read

Main Idea
In the womb and in infancy and childhood, humans go through a series of physical developments that are generally sequential.

Reading Focus
1. How is physical growth important from conception through childhood?
2. What are reflexes, and how are they beneficial?
3. What is motor development?
4. What do infants learn through the process of perceptual development?

Vocabulary
infancy
childhood
reflex

TAKING NOTES Use a graphic organizer like this one to take notes on physical development.



SIZED TO FIT

PSYCHOLOGY CLOSE UP

How did seat belts highlight differences in physical development?

How many times were you told as a child, "You can't do that until you're bigger"? What your parents (or that sign at the amusement park) meant was that you hadn't physically developed enough to do something safely. As we grow physically, we hit milestones that allow us to perform certain tasks or use certain technologies safely. Some technologies are even designed to keep people safe, but they may fail when levels of physical development are not taken into account.

In the United States, as recently as the 1970s, neither adults nor children wore any kind of safety restraints while riding in cars. By the early 1980s, an education campaign by the government, car makers, and the insurance industry made it clear: seat belts saved lives. But, as states began to pass laws and more people buckled up, something strange happened. Young children wearing seat belts in accidents were increasingly hospitalized with abdominal and even some spinal injuries. The problem: seat belts were designed with full-grown adults in mind, not smaller kids. The solution: booster seats for children ages 4–14 to compensate for their smaller size and to make the seat belts fit properly. As you'll see in this section, children develop physically in size and in other ways.

Physical Growth

A newborn enters the world possessing certain physical characteristics and equipped with certain abilities. For example, an infant is born measuring a certain length and weighing a certain amount. Both height and weight will increase with time and nourishment. The infant is also born with certain reflexes. Changes in reflexes and gains in height and weight are examples of physical development. Motor development and perceptual development are other examples.

Babies grow at an amazing rate, but the most dramatic gains in height and weight occur even before an infant's birth. During the first eight weeks of the mother's pregnancy, the tiny embryo in the mother's uterus develops fingers, toes, eyes, ears, a nose, a mouth, a heart, and a circulatory system. Both the liver and the kidneys begin their functions. Throughout this critical period, the embryo is extremely vulnerable. Drugs, alcohol, and other harmful chemicals can profoundly affect its normal development.

At eight weeks, the 1 1/2-inch-long embryo enters the fetal stage. Throughout this stage the fetus slowly begins to exhibit the characteristic appearance and even behavior of a baby. During the fourth month, the fetus nearly doubles in length, and the mother will soon begin to feel it moving. It can open and close its mouth and swallow as well. In months five and six, the fetus's skin finishes developing, and its hair and nails are becoming visible. It can open and close its eyes and even experiences periods of sleep and wakefulness. It is in general from this stage forward that the organs of the various body systems, such as the respiratory system, are developed to the point that they can sustain the life of the baby in case it is born prematurely.

During the nine months of pregnancy, the embryo develops from a nearly microscopic cell to a baby about 20 inches in length. A newborn weighs a billion or more times what it weighed at conception.

During **infancy**—the period from birth to the age of two years—dramatic gains continue in height and weight. Infants usually double their birth weight in about five months and triple it by one year. They grow about 10 inches in height in the first year. During the second year, infants generally gain another four to six inches in height and another four to seven pounds in weight.

The Babinski Reflex
Most babies are born with the Babinski reflex, which means they raise their big toes and fan out all of their toes when the soles of their feet are touched.

After infancy comes **childhood,** the period from two years old to adolescence. Following the second birthday, children gain on average two to three inches and four to six pounds each year until they reach the start of adolescence.

Reading Check **Recall** Give three examples of developments that occur during the fetal stage.

Reflexes

A **reflex** is an involuntary reaction or response, such as swallowing. Some of these reflexes the infant keeps; others such as sucking disappear when they are no longer needed. Soon after a baby is born, the doctor or nurse places a finger against the palm of the baby's hand. Babies are not told how to respond and do not "know" what to do, of course. Even so, they usually grasp the finger firmly. Grasping is a reflex. Reflexes are inborn, not learned, and they occur automatically, without thought.

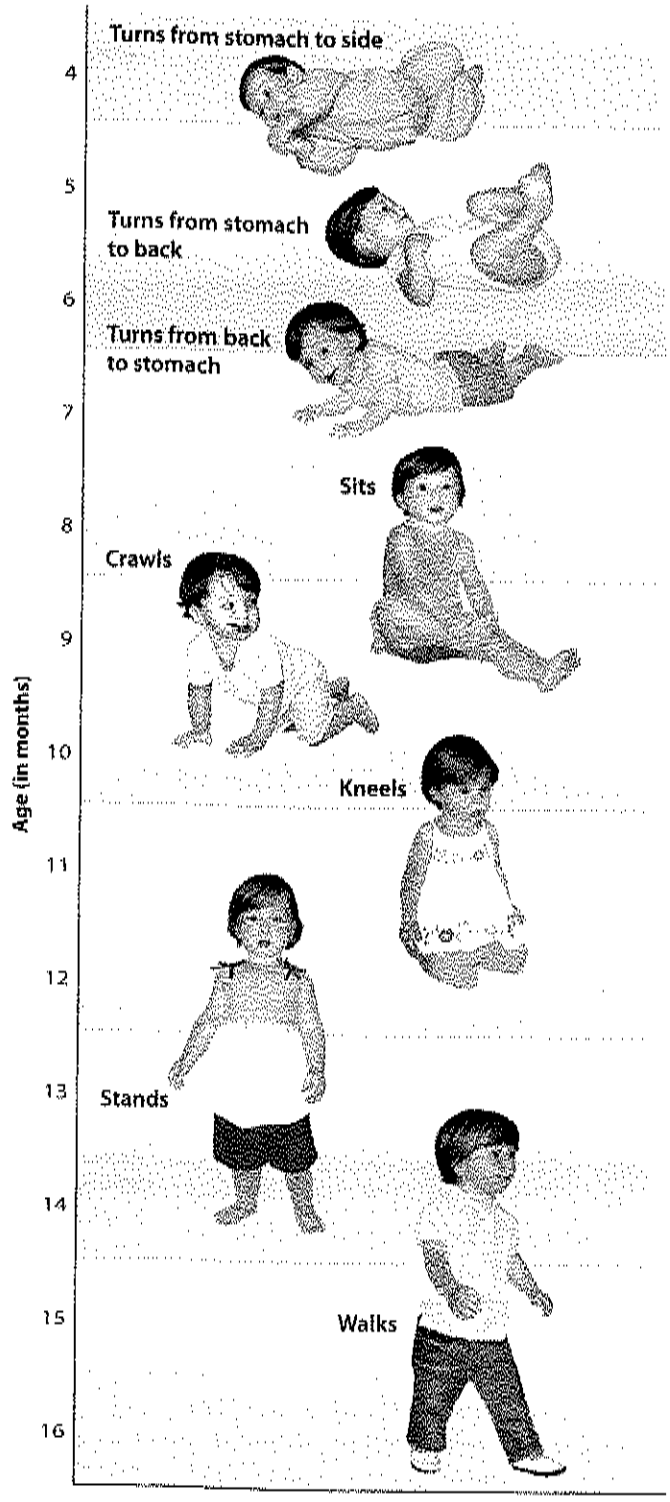
Some reflexes are essential to our survival. Breathing is such a reflex. Although it is a reflex, we can also breathe consciously if we wish—slowly or quickly, deeply or shallowly. The breathing reflex works for a lifetime. Sneezing, coughing, yawning, blinking, and many other reflexes also continue for a lifetime.

ACADEMIC VOCABULARY

respiratory system the system of organs and passages involved in the intake and exchange of oxygen and carbon dioxide between a living organism and its environment

MOTOR DEVELOPMENT IN INFANCY

Motor development in infants occurs in an ordered set of stages for most children. The stages build on one another, so each newly mastered task is necessary for the next to be possible.



Skills Focus **INTERPRETING VISUALS** About how long does it take for babies to learn to walk, and what skills do they typically learn first?

Rooting is another reflex that babies are born with. Because of the rooting reflex, babies turn toward stimuli that touch their cheeks or the corners of their mouths. Once infants locate the source of a stimulus, they automatically begin sucking and swallowing. The sucking and swallowing reflexes are essential to an infant's survival; without them, newborns would not eat. Babies reflexively suck objects that touch their lips and reflexively swallow food in their mouths.

Babies also reflexively withdraw from painful stimuli. They pull up their legs and arch their backs in response to sudden sounds or bumps. This is known as the Moro, or startle, reflex. Babies also raise their big toes when the soles of their feet are touched, a behavior that is called the Babinski reflex. They also eliminate wastes by reflex.

As children develop, many reflexes, such as rooting and sucking, disappear. Other reflexes, such as swallowing, remain. And some reflexes, such as elimination of wastes, come under voluntary control. These changes are all part of the maturation process.

Reading Check **Describe** How do newborns respond to their environment? Give two examples.

Motor Development

It might seem that, at first, babies are just bundles of reflexes and random movements. Soon, however, as their muscles and nervous systems mature, newborns' random movements are replaced by purposeful motor activity. The development of purposeful movement is called motor development. It is divided into two areas: gross motor development and fine motor development.

Gross motor development refers to babies' progress in coordinating major muscle groups, such as the arms, the legs, and the trunk. Rolling over, sitting up, crawling, and walking are all examples of gross motor skills. The development of these skills almost always proceeds in known and predictable stages. For example, almost all babies roll over before they sit up unsupported, and they crawl before they are able to stand up and later walk. Milestones in infants' and children's motor development are shown in the diagram at left.

Fine motor development refers to coordination of the hands, face, and other smaller muscles. As with gross motor skills, the development of fine motor skills begins with simple gains and proceeds in stages. At around four months, many babies can grab and shake toys. By nine months, some can pick up small objects between their thumb and index finger. Others will begin to show signs of right- or left-handedness. By a year, they may stack blocks or turn the pages of a book.

The point at which these various behaviors occur, however, is different from infant to infant and even from culture to culture. For example, in Uganda, infants usually walk before they are 10 months old, whereas in the United States, babies often do not start walking until around one year of age. Why might this be? Perhaps it is because, while American babies spend much of their time lying in cribs, Ugandan babies spend much of their time being carried on their parents' backs. This contact with the parents, the sense of movement, and the upright position the babies maintain as they are being carried may help them learn to walk earlier.

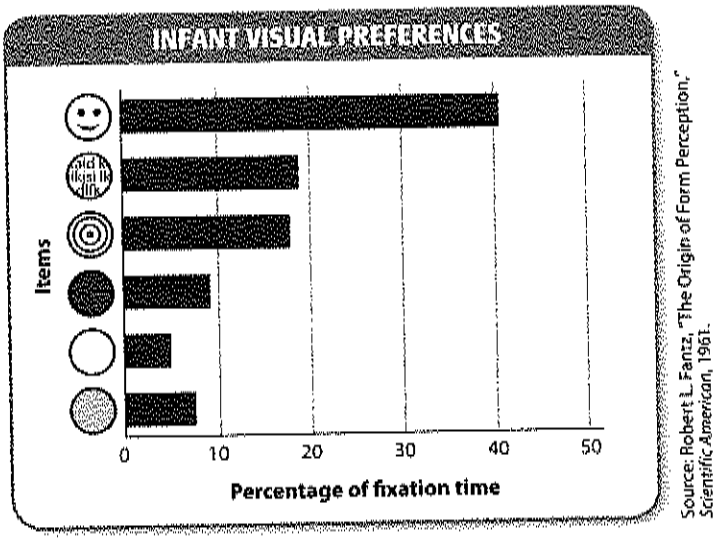
Reading Check **Identify** What are the two types of motor development?

Perceptual Development

Imagine what the world must seem like to a newborn. Prior to birth, the baby has spent several months in a warm, dark place. Now suddenly, it finds itself in a bright, noisy world full of sensory stimuli. Perceptual development is the process by which infants learn to make sense of the sights, sounds, tastes, and other sensations to which they are exposed.

Infants tend to prefer new and interesting stimuli. They seem to be "preprogrammed" to survey their environment and to learn about it. For example, a study by Robert Fantz found that two-month-old infants preferred pictures of the human face to any other pictures, such as newsprint, a bull's-eye, or colored disks without patterns.

Researchers have, however, discovered that infants' perceptual preferences are influenced by their age. For example, 5- to 10-week-old babies look longest at patterns that are fairly complex. It does not matter whether the pattern looks like a human face. What most interests them is the variety and complexity of the pattern. At this age, eyesight is not fully developed, so infants prefer to look at the most complex things they are capable of seeing reasonably well. By 15 to 20 weeks, patterns begin to matter. Babies then begin to stare longer at facelike patterns.



Source: Robert L. Fantz, "The Origin of Form Perception," *Scientific American*, 1961.

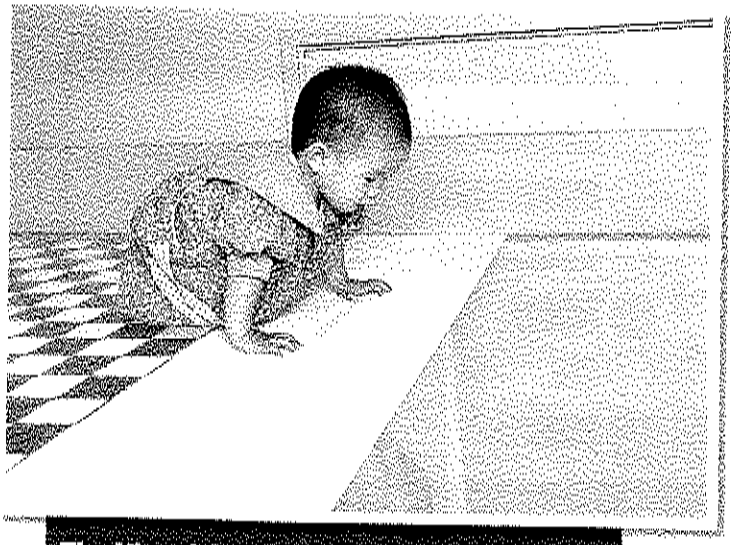
Skills Focus INTERPRETING CHARTS

Judging by the babies' preference, what age would you say they are?

These studies illustrate how nature and nurture work together. At first, infants seem to have an inborn preference for moderately complex visual stimuli. That is a result of nature. Their preference for human faces seems to appear only after they have had some experience with people. So that preference results from the infant's interaction with his or her environment.

Other studies have focused on depth perception in infants. In some of these studies, researchers use what has become known as the "visual cliff." The visual cliff is a special structure, a portion of which has a surface that looks like a checkerboard. Another portion is a sheet of glass with a checkerboard pattern a few feet below it. It creates the illusion of a drop-off of a few feet—like a cliff.

One classic study with the visual cliff found that very young infants seem to be unafraid when they are placed at the edge of the apparent drop-off. But by nine months, however, infants respond with fear to the drop-off.



The Visual Cliff
Most infants who can crawl refuse to cross the part that appears to be a cliff even if their mothers call them. ***What do the results of visual cliff experiments say about infants' visual abilities over time?***

Another classic study found that by the time infants learn to crawl, most of them will refuse to move onto the glass portion even when their mothers call them from the other side. Perhaps crawling and exploring the world have taught the older infants that drop-offs are dangerous. Experience may have contributed to their ability to perceive depth.

Vision, of course, is only one type of perception. In general, infants' hearing is much better developed at birth than is their eyesight. When it comes to hearing, most newborns stop whatever they are doing to turn toward unusual sounds. They respond more to high-pitched sounds than to low-pitched ones, although they seem to be soothed by the sounds of someone singing softly or speaking in a low-pitched tone. No wonder parents often sing lullabies to help their infants go to sleep.

By the 1990s all babies born in the United States were screened for hearing impairment before leaving the hospital. About 1 in 1,000 children have some degree of hearing loss. This loss ranges in severity from total deafness to partial hearing loss with some special educational needs. Children with serious hearing impairment benefit greatly from early detection. Beginning treatment early in life helps them to better acquire language and speech skills.

Newborns immediately distinguish strong odors. They spit, stick out their tongues, and wrinkle their noses at pungent odors and nasty tastes (as the rest of us do). But they smile and show licking motions in response to the sweet smells of chocolate, strawberry, and vanilla. They also like sweet-tasting liquid but refuse to suck salty or bitter liquids. It looks like a "sweet tooth" is part of human nature.

Reading Check **Recall** What elements make up perceptual development?

SECTION 2 Assessment

Reviewing Main Ideas and Vocabulary

1. **Define** What is a reflex? Give two examples.
2. **Recall** What are the two types of motor developments? What makes them different?
3. **Define** What is meant by the term *perceptual development*?

Thinking Critically

4. **Explain** In your own words, explain what the visual cliff experiment demonstrates about perceptual development.
5. **Draw Conclusions** Which real-life example from the section shows that some motor developments are influenced more by environment than by heredity?
6. **Evaluate** Why might it be advantageous for infants to react negatively to foul odors and bad tastes?
7. **Compare and Contrast** Using your notes and a graphic organizer like the one below, describe how motor development and perceptual development are similar and different.

Similarities	Differences
1.	
2.	

FOCUS ON WRITING

8. **Expository** Write a paragraph giving at least two theories of why babies seem pre-programmed to survey their environment and to learn about it.

Raising a Better Child

In the past, ideas about how to raise children generally came from one's family, religion, and other institutions within the community. Beginning around the 1900s, however, the theories of psychologists increasingly began to inform American parenting strategies. Why did parents look beyond traditional sources to learn how to raise their children?

The social upheavals of the last hundred years provide clues to the answer. Because people began to live farther away from their relatives, grandparents were no longer nearby to offer helpful parenting suggestions or quick advice. The U.S. economy became more complicated and competitive, and often both parents were forced to, or chose to, work outside the home. Mass media and consumerism became huge influences on children. With this very brief sampling of the social changes of the twentieth century, it is no wonder American parents struggle to cope.

Today, at any library or bookstore, the number of books promising to improve both parents and children is mind-boggling. This suggests that many parents are unsure about the "right" way to raise children.

One popular idea, dubbed the "Mozart effect," involves the music of the brilliant 18th-century Austrian composer, Wolfgang Amadeus Mozart. Playing Mozart's complex and beautiful music for children, the theory says, helps tiny brains make all-important neural connections that boost life-long intelligence. This movement began with a 1993 study in which college students listened to a Mozart sonata. Later, researchers found that some students had increased spatial-reasoning skills. The results, however, lasted only 15 minutes after the students stopped listening to the sonata. It is hard to say how the narrow results of this study expanded into books and CDs to play for babies. Better-supported research, however, shows that when preschool and elementary school kids learn to read music or study an instrument, their spatial-reasoning skills show lasting improvements.

Another idea getting media attention deals with the importance of play. Some researchers say that today's children are hurt by not playing enough or in the same ways that children did in the past. These psychologists propose that play for children today relies too heavily on purchased objects—toys, computers, video games—with built-in rules. Imaginative, unsupervised, active play with other children, researchers say, helps in the development of self-regulation. Their studies suggest that kids who engage in this kind of play control their emotions and have greater self-motivation and discipline in adulthood.

Clearly, among the avalanche of parenting books and theories in the marketplace, some have more merit than others. Parents need to do their homework when looking for help with their kids.

Some research shows that active, imaginative play helps kids develop useful, lifelong skills.

Thinking Critically

1. **Explain** What does the large number of child-rearing books suggest about the challenges that parents face?
2. **Discuss** How do you think the ways that you played as a child have affected you?

SECTION 3

Social Development

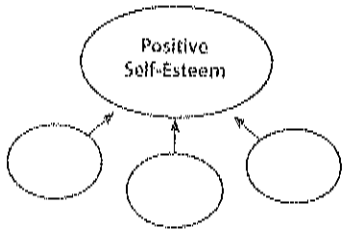
Before You Read

Main Idea
Social development in infants and children has much to do with parents' behaviors, histories, personalities, and abilities. Other caregivers are involved in raising many American children.

Reading Focus
1. Why is attachment vital to human relationships?
2. How do styles of parenting differ?
3. What are some issues associated with child abuse and neglect?
4. How does outside child care affect children's development?
5. What is the importance of self-esteem to developing children?

Vocabulary
attachment
stranger anxiety
separation anxiety
contact comfort
imprinting
authoritative
authoritarian
self-esteem
unconditional positive regard
conditional positive regard

TAKING NOTES Use a graphic organizer like this one to take notes on social development.



Teaching Baby Birds to Fly Right

Whooping cranes hatched from eggs in captivity learn their migration route from an ultralight aircraft.

PSYCHOLOGY CLOSE UP ***What can baby cranes tell us about social development?*** In 1950, the last whooping cranes that nested in Louisiana died. This tragedy left only one natural flock of these majestic birds in North America. This flock, which migrates yearly between northern Canada and southern Texas, had only 21 birds in 1955. If a calamity struck this population, wild whooping cranes would disappear from North America forever. What could save the wild cranes?

One answer is a project involving biologists in comically awkward whooping crane outfits and volunteers flying ultralight aircraft. Each year, a new group of crane hatchlings arrives at a wildlife refuge in central Wisconsin. Biologists care for the hatchlings following strict rules: they can not talk, and they must wear the outfits to keep the young birds from imprinting on people. Whooping cranes imprint on—become permanently attached to—the first moving object they see upon hatching. This process tells them what they are for the rest of their lives. The cranes then learn to follow the ultralight aircraft, beginning on the ground before they can fly. When the hatchlings have matured and fall arrives, it is time for them to follow the aircraft to Florida. If the birds had imprinted on a person, they might break off their migration to land at a football game or a backyard barbecue. The proper attachment of the hatchlings to their own kind helps ensure the future of the flock.

Attachment

Social development involves the ways in which infants and children learn to relate to other people. For example, infants usually can be comforted by being held, and they soon respond to their mothers' voices. At first, they might cling to their mothers, but after a few months they venture out to explore the world and to make contact with strangers. Infants tend to play with toys by themselves, even when other children are around. As they grow older, however, they begin to play with others. All of these and other changes are part of social development.

Attachment is an important factor affecting social development. Feelings of **attachment** are the emotional ties that form between people. Feelings of attachment keep people together. Because infants are basically helpless and are totally dependent on others to fulfill their needs, feelings of attachment are essential to their survival. Infants and children try to stay in contact with the people to whom they are attached.

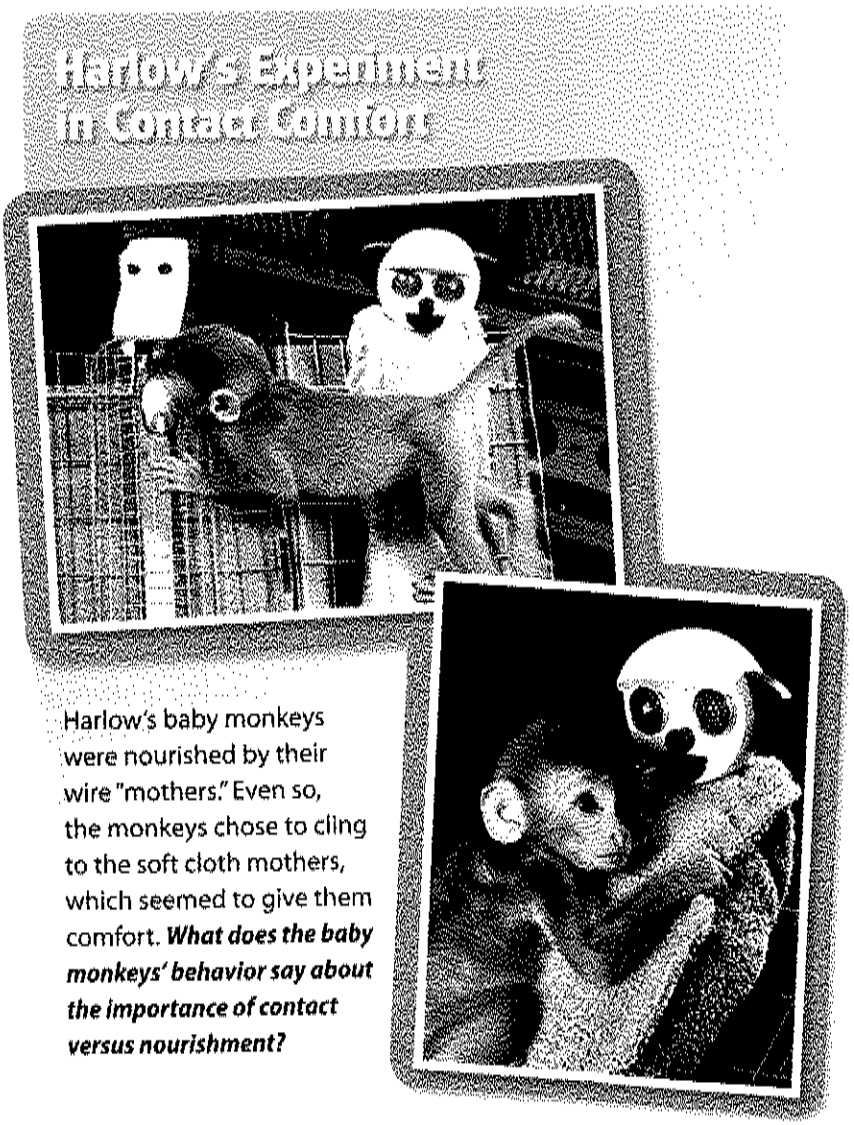
Development of Attachment Psychologist Mary Ainsworth studied attachment in infants around the world. What she observed in every place she studied was that, at first, infants prefer being held or even just being with someone—anyone—over being alone. By about four months of age, however, infants develop specific attachments to their main caregivers—usually their mothers. This attachment grows stronger by six to seven months. Once they reach this point, infants and children try to maintain contact with their mothers and cry or complain when they are separated.

By the age of about eight months, some infants develop a fear of strangers. This fear is known as **stranger anxiety.** Infants who experience stranger anxiety cry and reach for their parents if they are near strangers. Their anxiety is somewhat less if the person to whom they are attached is holding them. The closer they are to the strangers, however, the more upset they become. They are most distressed when the strangers actually touch them.

At about the same age, infants may also develop separation anxiety. **Separation anxiety** causes infants to cry or behave in other ways that indicate distress if their mothers leave them. Why do infants become so attached to their primary caregivers? Research suggests that at least two factors are involved: contact comfort and imprinting.

Contact Comfort For a long time, psychologists thought that infants became attached to those who fed them. But then psychologist Harry F. Harlow observed that infant monkeys without mothers or companions became attached to pieces of cloth in their cages—even though, of course, the pieces of cloth did not provide food. The monkeys held on to their pieces of cloth and were upset when the cloth was taken away. Harlow conducted several experiments to find out why, and what types of objects to which the monkeys would and would not become attached.

In one study, Harlow put infant monkeys in cages, each of which had two "mothers."



Harlow's baby monkeys were nourished by their wire "mothers." Even so, the monkeys chose to cling to the soft cloth mothers, which seemed to give them comfort. ***What does the baby monkeys' behavior say about the importance of contact versus nourishment?***

One object was made from wire and held a baby bottle. The other, which had no bottle, was made of soft terry cloth. The monkeys spent most of their time clinging to their cloth "mother," even though it did not feed them. Harlow thus concluded that the monkeys had a basic need for **contact comfort,** which is the instinctual need to touch and be touched by something soft, such as skin or fur. This need seems to be even stronger than the need for food. In other words, the monkeys and perhaps human babies may cling to their mothers because of the need for contact comfort rather than just because they are hungry. Based on such findings, researchers have concluded that attachment grows more from bodily contact than from feeding.

Bonds of attachment between mothers and infants also appear to provide a secure base from which the infants can explore their environments. Harlow and Zimmerman placed toys, such as stuffed bears and wooden insects, in cages with infant monkeys. Some of the cages had wire "mothers," and the others had terry cloth "mothers." The monkeys who were alone or with wire mothers cringed in fear as long as the bears or insects were in the cage. Infant monkeys in cages with terry cloth mothers, on the other hand, cringed for a while but eventually began to explore the bears or insects. The terry cloth mothers apparently gave the infant monkeys a sense of security that enabled them to explore the world around them.

Imprinting For many animals, attachment is an instinct. Instinctive behavior develops during a critical period shortly after birth. Ducks, geese, and some other animals become attached to the first moving object they see. The moving object is said to become imprinted on the infant animal. **Imprinting** is the process by which some animals form immediate attachments during a critical period.

Researchers have shown that animals can become imprinted on some rather unusual objects. Using imprinting, researcher Konrad Lorenz acquired a family of goslings for himself. How did he do it? He was present when the goslings hatched, and he then allowed them to follow him. The critical period for imprinting in geese and some other animals begins when they can first move about on their own. Lorenz's "family" followed him wherever he went. They ran to him when they were frightened. They honked loudly when he left them alone—just as human infants cry when they are left by the people to whom they are attached.

Although the development of attachment may also be instinctive in people, human attachments develop somewhat differently than attachments among ducks and geese. For example, children do not imprint on the first person they see or are held by. For humans, it takes several months before infants become attached to their main caregivers. There is also no known critical period for attachment in humans. Children can become strongly attached to their adoptive parents even when they are adopted after infancy.

Secure Versus Insecure Attachment When mothers or other primary caregivers are affectionate and reliable, infants usually become securely attached. Infants with secure attachment are very bonded to their caregivers. They cry or protest if the parent or caregiver leaves them. When the caregiver returns, the infants welcome that person back and are happy again.

When caregivers are unresponsive or unreliable, the infants are usually insecurely attached. They often do not seem to mind when the caregivers leave them. When the caregivers return, the infants make little or no effort to seek contact with them. Some insecure infants may cry when picked up, as if they are angry with the caregiver.

Secure infants may mature into secure children. Secure children are happier, friendlier, and more cooperative with parents and teachers than insecure children are. They get along better with other children than insecure children do. Secure children are also less likely to misbehave and more likely to do well in school than insecure children.

Autism Autism is a developmental disorder that prevents children from forming proper attachments with others. It presents a wide range of social, cognitive, behavioral, and physical problems. People with autism have certain brain abnormalities that likely came about during pre-natal development. As a result, they have difficulty processing sensory information, which severely damages their

Statistically Speaking...

Autism Diagnosed cases of autism are growing, though the increase may be due, in part, to greater knowledge and better diagnostic techniques. Autism can devastate families, and its impact on society is growing.

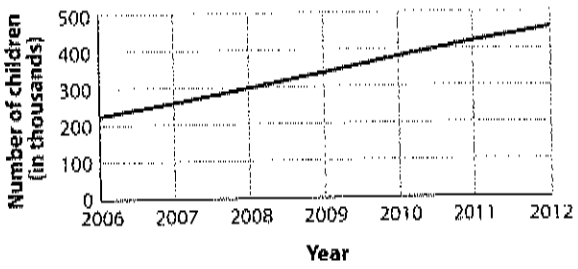
4.5 to 1 The ratio of males to females diagnosed with autism

Over 2,000,000 U.S. children age 4–17 diagnosed with autism through 2014

94% The percentage of parents of autistic children who reported that their child needed special services for a medical, behavioral, or other health condition

Sources: Centers for Disease Control and Prevention, 2014

CHILDREN WITH A DIAGNOSIS OF AUTISM ENROLLED IN U.S. SCHOOLS



Source: U.S. Department of Education, National Center for Education Statistics, 2015

Skills Focus **INTERPRETING GRAPHS** How many years did it take for the number of children with autism to double, reaching 450,000?

ability to relate to their environment as a whole. For example, some people with autism experience pain at the slightest touch, while others have no reaction to painful stimuli. Autism severely limits its sufferers' ability to communicate with others. Speech is often limited to strange noises or endlessly repeated words or phrases, or it is nonexistent.

People with autism have a very wide variety of symptoms that can be very severe or very subtle. As a result, some people with mild cases go undiagnosed for years. Doctors cannot diagnose autism through a medical test. It can only be detected by watching how a child behaves and how he or she communicates and interacts with others.

Parents and doctors often recognize symptoms of autism during infancy and early childhood. Infants may go limp or become stiff and rigid when their parents hold them. Some infants cry when they are picked up, while others take no notice of affection from their parents. Generally, signs of attachment—smiling, eye contact, playfulness—are absent. In addition, an autistic child may show no signs of stranger anxiety. Later in infancy and into childhood, certain physical behaviors, such as arm flapping and walking on toes, can occur. Austistic children may also begin to develop certain obsessive or ritualistic behaviors, or they may become self-destructive—banging their heads or biting themselves.

Reading Check **Define** What is contact comfort and how does it relate to the idea of attachment?

Styles of Parenting

Styles of parenting differ along two separate dimensions. One dimension is warmth-coldness; the other is strictness-permissiveness. Warm parents can be either strict or permissive, as can cold parents. The terms *warm, cold, strict,* and *permissive* are at the extreme ends of these dimensions. This means that, for example, parents are neither absolutely cold nor absolutely warm. The vast majority of parents are somewhere in the middle but closer to one extreme or the other.

Warm or Cold? Warm parents show a great deal of affection to their children. For example, they hug them, and smile at them often. They show their children that they are happy to spend time with them and enjoy their company. Cold parents may not be as affectionate toward their children or appear to enjoy them as much.

Research suggests that children fare better when their parents are warm to them. The children of warm parents are more likely to be well adjusted. They are also more likely to develop a conscience—a sense of moral goodness or a sense of responsibility when they do wrong. Children of cold parents, on the other hand, are usually more interested in escaping punishment than in doing the right thing for its own sake.

Strict or Permissive? If you have younger siblings, you probably know that children do many things that anger or annoy other people. For example, they may make noise when other people are trying to sleep or concentrate on a difficult task. Children may also engage in behaviors that are unhealthy to themselves. They may have poor eating habits or watch too much television. They may neglect their schoolwork or play with dangerous objects.

Some parents are extremely strict when it comes to such behaviors. They impose many rules and supervise their children closely. Permissive parents, on the other hand, impose fewer rules and watch their children less closely. Permissive parents tend to be less concerned about neatness and cleanliness than are strict parents.

Parents may be strict or permissive for different reasons. Some extremely strict parents cannot tolerate disorder. Others fear that their children will run wild and get into trouble if they are not taught self-discipline. Some parents are permissive because they believe that children need freedom to express themselves if they are to become independent. Other parents are permissive because they are less concerned or have little time to monitor their children's activities. Without clear and consistent guidance, these children may become confused about which behaviors are acceptable and which are not.

Strictness can have positive and negative results, depending on how it is used. Strictness is not necessarily the same as meanness; parents can be strict but still love their children. Research suggests that consistent and firm enforcement of rules can foster achievement and self-control, especially when combined with warmth and support. But physical punishment or constant interference may lead to disobedience and poor grades in school.

Authoritative (meaning "with authority") parents combine warmth with age appropriate rules and responsibilities. The children of authoritative parents are often more independent and achievement oriented than other children. They also feel better about themselves. Parental demands for responsible behavior combined with affection and support usually pay off.

Be careful not to confuse the term *authoritative* with the word *authoritarian*, which means "favoring unquestioning obedience." **Authoritarian** parents believe in obedience for its own sake. They have strict guidelines that they expect their children to follow without question. Children of authoritarian parents may become either resistant to other people or dependent on them. They generally do not do as well in school as children of authoritative parents. They also tend to be less friendly and less spontaneous.

Reading Check **Describe** Can a parent be warm but strict or cold but permissive? Explain how parenting styles can be a mix of things.

STYLES OF PARENTING

Quick Facts

Styles of parenting lie somewhere in the categories of strict-permissive and cold-warm. Each pair of words in the chart, such as *demanding* and *lenient* or *detached* and *affectionate*, represent ends of a continuum. Most parents do not lie at these extreme ends, but generally fall somewhere in the middle.

Strict	Permissive	Cold	Warm
Demanding	Lenient	Indifferent	Supportive
Controlling	Democratic	Careless	Protective
Dictatorial	Inconsistent	Detached	Affectionate
Antagonistic	Overindulgent	Negligent	Caring

Skills Focus **INTERPRETING CHARTS** Do you think it is possible for parents to be strict but warm or permissive but cold? Explain your answer using terms from the chart.

Child Abuse and Neglect

Most parents are kind and loving to their children. Yet child abuse—physical, sexual, and psychological—is relatively widespread. The incidence of child abuse is seriously underreported because children themselves often are unable, unwilling, or afraid to go to the

Quick Lab

Identifying Parenting Styles

How are different parenting styles expressed in the communications between parents and children? And do interpretations of parenting styles vary? Do all children perceive parents' communications in the same way?

PROCEDURE

1. Organized the class into four groups—one for each style of parenting. Group one will be for *strict*, group two for *permissive*, group three for *cold*, and group four for *warm*.
2. On a small sheet of paper, write a statement or question that you think parents who conform to your group's assigned parenting style might say to their children. Try to make your statements or questions true to life. Label your paper with the parenting style, but do not write down your name. Remember that although most parents lean toward one of these parenting styles, very few are at the extremes.
3. Fold up your papers and collect them in a box.
4. Have the teacher draw statements from the box and read them aloud. Your teacher should not tell which style is represented. As a class, discuss in which category each statement belongs.

ANALYSIS

1. Does the class agree on which statements belong in which category? Discuss possible reasons for disagreement.
2. Discuss the possibility that a child might see his or her own parents' style as the norm, even if it falls close to one extreme or another.

authorities, and abusive parents sometimes try to protect one another. In 2013, about 3.5 million allegations of child abuse or neglect were made in the United States. About 679,000 children were found to be victims, which comes to approximately 9.1 children per 1,000. In the same year, there were an estimated 1,520 child abuse fatalities, of which 74 percent were children under the age of three.

Physical child abuse refers to a physical assault of a child, including actions such as striking, kicking, shaking, and choking. In 14 states and the District of Columbia, any child born showing evidence of having been exposed to alcohol or illegal drugs is also legally a victim of child abuse. Child sexual abuse is the sexual victimization or exploitation of a child by an older child, an adolescent, or an adult. More than 80 percent of the time in cases of sexual abuse, the child knows the perpetrator. It is often someone such as a relative, a child-care provider, a family friend, or a teacher.

Neglect is failure to give a child adequate food, shelter, clothing, emotional support, or schooling. More health problems and deaths result from neglect than from abuse.

Why do some parents abuse or neglect their children? Psychologists have found the following factors to be associated with child abuse or neglect:

- stress, particularly the stresses of unemployment and poverty
- a history of physical or sexual abuse in at least one parent's family of origin
- acceptance of violence as a way of coping with stress
- lack of attachment to the child
- substance abuse
- rigid attitudes about child rearing

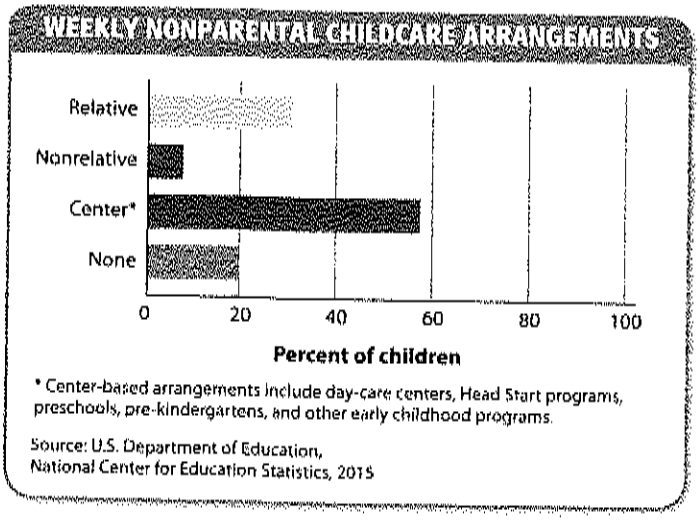
Studies show that children who are abused run a higher risk of developing psychological problems than children who did not grow up in an abusive environment. For example, they tend to be unsure of themselves. They are thus less likely than other children to venture out to explore the world around them. They are more likely to suffer from a variety of psychological problems, such as anxiety, depression, and low self-esteem. They are less likely to be close to their peers and more likely to engage in aggressive behavior. As adults, they are more likely to act in violent ways toward their dates or spouses.

Child abuse tends to run in families. There are many possible reasons for this pattern. For one thing, children may imitate their parents' behavior. If children see their parents coping with feelings of anger through violence, they are likely to follow suit.

They are less likely to seek other ways of coping, such as humor, verbal expression of negative feelings, deep breathing, or silently "counting to 10" before reacting. These strategies help by giving the feelings of anger time to subside. When parents attempt to cope with anger and stress by abusing alcohol, it can lead to child abuse as well. Alcohol abuse runs in families, and alcoholism is thought to have a genetic component.

Statistically Speaking...

Daycare Whether a child receives nonparental care depends to some degree on questions of age, income, and education.



* Center-based arrangements include day-care centers, Head Start programs, preschools, pre-kindergartens, and other early childhood programs.

Source: U.S. Department of Education, National Center for Education Statistics, 2015

53% Percent of one-year-olds who have nonparental child care; jumps to 85% at age five

53% Percent of households with an income of $10,000 or less per year that have nonparental child care; rises to 72% for households over $75,000

43% Percent of mothers with a high school diploma or GED have children in child care; 74% of mothers with graduate or professional degrees have children in child care

Skills Focus **INTERPRETING GRAPHS** Why does the percentage of children in child care add up to more than 100 percent?

Source: The National Center for Education Statistics, National Household Education Surveys Program, 2005

Children also often adopt their parents' ideas about discipline. Abused children may come to see severe punishment as normal. As a result, when they have children, they may continue the pattern of abuse and neglect.

This pattern does not mean, however, that all people who were abused as children will in turn become abusers themselves. Most children who are victims of abuse do not later abuse their own children. One study found that mothers who had been abused as children but who were able to break the cycle of abuse with their own children were likely to have received emotional support from a nonabusive adult during childhood. They were also likely to have participated in therapy and to have a nonabusive mate.

Reading Check **Describe** Why is a parent with a history of child abuse in his or her own family more likely to become a child abuser?

Child Care

In the United States today, most parents—both fathers and mothers—work outside the home. More than half of mothers of children younger than one year of age are working mothers. For this reason, millions of preschoolers are cared for in day-care facilities. Some parents and psychologists are concerned about the effects of day care on the development of children.

The effects of day care depend in part on the quality of the day-care center. One study found that children in day-care centers with many learning resources, many caregivers, and a good deal of individual attention did as well on cognitive and language tests as children who remained in the home with their mothers. A Swedish study actually found that on tests of math and language skills, children in the best day-care centers out-performed children who remained in the home.

Studies of the effects of day care on parent-child attachment have yielded mixed results. Children in full-time day care show less distress when their mothers leave them and are less likely to seek out their mother when they return. Some psychologists worry that this distancing from the mother could mean that the child is insecurely attached. But other psychologists suggest that children may simply be adapting to repeated separations from and reunions with their mothers.

Day care seems to have mixed effects on other aspects of children's social development. Children in day care are more likely to share their toys and be independent, self-confident, and outgoing. However, some studies have found that children in day care are less cooperative and more aggressive than are other children. Perhaps some children in day care do not receive the individual attention they need. When they are placed in a competitive situation, they become more aggressive to try to meet their needs. Yet some psychologists interpret the greater aggressiveness of children in day care as a sign of independence rather than social maladjustment.

All in all, it would appear that nonparental care in itself may not affect child development very much. The quality of care seems to be more important than who provides it.

Reading Check **Recall** Explain why the effects of day care on children are said to be mixed.

Self-Esteem

Self-esteem, the value or worth that people attach to themselves, begins to develop in early childhood. It is important because it helps to protect people against the stresses and struggles of life. Everyone experiences failure now and then, but high self-esteem gives people the confidence to know that they can overcome their difficulties. Although high self-esteem is important, recent research questions its aggressive promotion, at the expense of other virtues, in modern child rearing.

Influences on Self-Esteem What factors influence self-esteem? Secure attachment plays a major role. Young children who are securely attached to their parents are more likely to have high self-esteem.

How parents react to their children can also make a difference. Research suggests that authoritative parenting contributes to high self-esteem in children. Children with high self-esteem tend to be close to their parents because their parents are loving and involved in their lives. Their parents also teach and expect appropriate behavior and thus encourage them to become competent individuals.

Psychologist Carl Rogers noted that there are two types of support parents can give to their children—unconditional positive regard or conditional positive regard. **Unconditional positive regard** means that parents love and accept their children for who they are—no matter how they behave. Children who receive unconditional positive regard usually develop high self-esteem. They know that even if they do something wrong or inappropriate, they are still worthwhile as people.

On the other hand, children who receive conditional positive regard may have lower self-esteem. **Conditional positive regard** means that parents show their love only when the children behave in certain acceptable ways. Children who receive conditional positive regard may feel worthwhile only when they are doing what their parents (or other authority figures) want them to do.

Once these children grow up, they often continue to seek the approval of other people. Excessive need for approval from other people is linked to low self-esteem. It is unrealistic for people to expect everyone to like and respect them. If they understand that it is natural for others to not always appreciate them, they may have higher self-esteem in the long run.

A sense of competence also increases self-esteem. By the age of about four, children begin to judge themselves according to their cognitive, physical, and social competence. Children who know that they are good at something usually have higher self-esteem than others. Children may feel good about themselves if they are good at puzzles or counting (cognitive skills), if they are good at tying their shoelaces or swinging (physical skills), or if they have friends (social skills).

Gender and Self-Esteem By the ages of about five to seven, children begin to value themselves on the basis of their physical appearance and performance in school. Girls tend to display greater competence in the areas of reading and general academic skills. Boys tend to display competence in math and physical skills.

Does this mean that girls are genetically better in reading and boys better in math? No. It may be that the reason girls and boys show greater competence in these areas is that people around them have suggested that this is what girls and boys are *supposed* to be good at. So girls predict that they will do better on tasks that are considered to be "feminine."

Boys predict that they will do better when tasks are labeled "masculine." When people feel they will do well at a particular task, they often do. People generally live up to the expectations that they have for themselves and that others have for them.

CASE STUDY CONNECTION

Bullying Kids who bully their classmates may be driven by multiple factors, but low self-esteem does not appear to be one of them. Too often, however, low self-esteem is the result for victims of bullying.

Age and Self-Esteem Children gain in competence as they grow older. Through experience they learn more skills and become better at them. Even so, their self-esteem tends to decline during the elementary school years. Self-esteem seems to reach a low point at about age 12 or 13 and increases again during adolescence. What explains this pattern? It appears that young children assume that others see them as they see themselves. Thus, if they like themselves, they assume that other people like them too. As children develop, however, they begin to realize that some people might not see them the way they see themselves. They also begin to compare themselves to their peers. If they see themselves as less competent in some areas, their self-esteem may decrease.

The Self-Esteem Trap By the 1970s, the dominant feeling among psychologists and in U.S. culture at large was that boosting people's self-esteem could greatly improve the state of the society. Greater self-esteem would help people solve their personal problems and love themselves and their neighbors. It was thought of by many as a potential cure-all for society's ills. Parents and teachers were taught that failure, ranking, and unequal rewards for competition were potential death blows to self-esteem. Showering children with praise regardless of performance on a task was the order of the day.

In 2000, a group of psychologists surveyed the published research on the subject and presented findings on the benefits of high self-esteem. The conclusions were surprising. High self-esteem in children did not lead to higher grades. Kids with high self-esteem did have higher grades. But that was because getting good grades promoted high self-esteem, not the other way around. Also, high self-esteem did not make violent kids any less so or keep kids from becoming bullies. The evidence showed that, in general, bullies think highly of themselves. The stereotype of the bully as sullen, self-hating, and desperate for praise was not borne out by the research.

Other results were more predictable. People with high self-esteem were generally happier and more resilient in the face of problems, and they showed more initiative. They were also more likely to stand up to bullies themselves. Although these are positive things, it seems that focusing on building self-esteem at the expense of other qualities, such as self-control or self-discipline, may be misguided.

Reading Check **Recall** When and how does a person's sense of self-esteem develop?

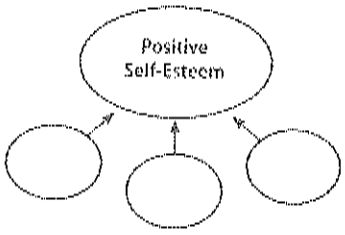
SECTION 3 Assessment

Reviewing Main Ideas and Vocabulary

1. **Identify Main Ideas** Name and describe the two types of anxiety that strike infants around the age of eight months.
2. **Recall** What does it mean for a child to be insecurely attached, and what can be the result for the child?
3. **Explain** What is the link between autism and a lack of attachment between infant and parent?

Thinking Critically

4. **Draw Conclusions** Why do you think children who have been abused are more likely to suffer from psychological problems, such as anxiety, depression, and low self-esteem?
5. **Elaborate** How do you think boys and girls can be helped to display competence in areas that they presently do not?
6. **Analyze** Using your notes and a graphic organizer like this one, list things related to attachment and parenting that might be related to positive self-esteem.



FOCUS ON WRITING

7. **Narrative** Write two paragraphs about parenting styles. In the first, say what combination of parenting qualities you think is best for bringing up a child. In the second, say what combination of parenting qualities you are likely to exhibit based on your personality. Do the two match?

Inside the Autistic Mind

People with autism have a difficult road in life. The list of possible problems associated with autism is long and troubling. Autistic people often exhibit obsessive/compulsive and self-injurious behavior. Many have impaired intellectual abilities and motor skills. All autistic people have moderate to severe issues with communication and socialization. Recent research is looking deep into the brains of people with autism to help explain and attempt to deal with this strange and serious condition.

Researchers at York University in Toronto, Ontario, are trying to observe differences in the brain functions of people with autism versus those of people whose development is more typical. The researchers are doing this by observing brain activity in mother-child pairs where the child has autism.

The mother-child pairs play, socialize, and share—things that require joint attention and social-emotional engagement. While they do this, their brain activity is monitored using the sensing devices pictured below. The subjects wear nets containing electroencephalography (EEG) sensors that read electrical activity produced by the brain. Other mother-child pairs, in which the child is not autistic, play and socialize in a similar way, and their brain activities are monitored as well.

Another area of research has to do with mirror neurons—a new class of brain cells identified only recently. The discovery of mirror neurons, like many scientific discoveries, was quite accidental. Researchers studying brain function of macaque monkeys noticed that certain neurons fired when a monkey performed a certain task, such as reaching for a peanut. Later, as a researcher reached for a peanut to hand to the monkey, the very same neurons fired. In other words, the same neurons fired in the monkeys' brains whether they were performing a certain act or watching that same act being performed. By firing when the monkey is just observing, these neurons "mirror" observed movement.

Over time, researchers demonstrated that this same mirror neuron system exists in humans as well. For most people, scientists believe, the mirror neuron system is what allows them to acquire language, understand and imitate the actions of others, and demonstrate empathy.

Studies of the mirror neuron systems of people with autism show intriguing results. The mirror neuron systems of people with autism responded when they performed an activity, but not when they observed the activity. These findings may help explain why individuals with autism have trouble comprehending and responding appropriately to others (Oberman et al, 2005).

The findings of these two areas of research may help doctors diagnose autism earlier. In addition, they may help in the development of new and better therapies.

Thinking Critically

1. **Analyze** Why do you think the mothers are involved in the first study described?
2. **Discuss** Why do you think mirror neuron problems lead to empathy and language shortcomings?

Researchers monitor the brain functions of children with autism and their mothers. They hope to develop treatments and diagnostic techniques from their findings.

SECTION 4

Cognitive Development

Before You Read

Main Idea
The study of cognitive development looks at how people's thought processes change and evolve over time. Jean Piaget and Lawrence Kohlberg are two influential theorists in this area.

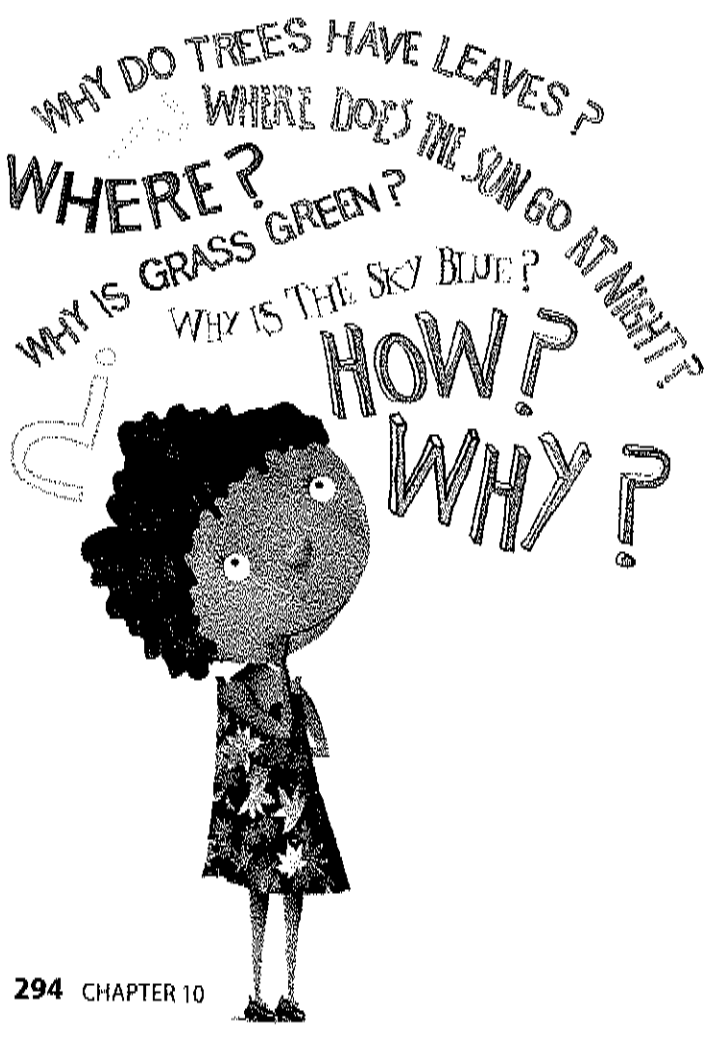
Reading Focus
1. What are the stages of Piaget's theory of cognitive development?
2. How did Kohlberg use a moral dilemma to illustrate his theory of moral development?

Vocabulary
sensorimotor stage
object permanence
preoperational stage
concrete-operational stage
formal-operational stage
preconventional moral reasoning
conventional moral reasoning
postconventional moral reasoning

TAKING NOTES Use a graphic organizer like this one to take notes on cognitive development.

Piaget	Kohlberg

Five-year-old LOGIC



PSYCHOLOGY CLOSE UP ***Have you ever spent some quality time with a five-year-old?*** Most five-year-olds are a ton of fun to be around. They're energetic, creative, and inquisitive—boy, are they inquisitive. Sometimes you think the questions will never stop. They also employ a peculiar brand of logic. Order a pizza for two five-year-olds some day, and you'll find out. Sit them at the kitchen table together, and let them watch while you select two identically sized slices of pizza. Cut one slice into bite-sized pieces and leave the other one whole. Give the whole piece to one child and the cut-up piece to the other one. There will certainly be a problem. The child with the whole piece will probably start to gloat: "I got more than you!" The child with the cut-up slice will pout: "Why did you give me less?" They react this way even though they watched you get two identical slices!

The pizza argument is just one example of five-year-old logic. Children's thought processes and how they develop are the subjects of this section.

Piaget's Theory of Cognitive Development

In addition to social development, psychologists are interested in studying cognitive development, or the development of people's thought processes. Jean Piaget (1896–1980) is probably the best-known researcher in the area of children's cognitive development. When Piaget was in his early 20s, he was employed at the Binet Institute in Paris. At the institute he worked on the Binet intelligence test, trying out potential test questions on children.

Before long, Piaget realized that the children he questioned gave certain types of wrong answers and that these wrong answers fit patterns from child to child. Piaget was so interested in these patterns that the study of children's thinking became his life's work.

Assimilation and Accommodation Piaget believed that human beings organize new information in two ways: through assimilation and through accommodation. Assimilation is the process by which new information is placed into categories that already exist. For example, a little girl might know the word *doggie* because her family has a pet collie. If she sees a Great Dane on the street and says "doggie," she has assimilated the new information about the Great Dane into the category "dog"—even though the Great Dane looks and may act differently from her collie.

If the same child sees a cat and says "doggie," an adult will most likely correct her. Through such corrections, she will learn that the category "dog" does not apply to cats, and a new category is needed. This adjustment is an example of accommodation—a change brought about because of new information.

Piaget theorized that children's thinking develops in a sequence of stages. Some children are more advanced than others at a given age, but the developmental sequence is the same for everyone. Piaget identified four stages: sensorimotor, preoperational, concrete operational, and formal operational.

The Sensorimotor Stage The behavior of newborns is mainly reflexive. They are capable only of responding to their environment and cannot initiate behavior. Instead of acting, infants react. By about one month of age, however, infants begin to act with purpose. As they coordinate vision with touch, for example, they will look at objects they are holding.

The first stage of cognitive development is characterized mainly by learning to coordinate sensation and perception with motor activity. Infants begin to understand that there is a relationship between their physical movements and the results they sense and perceive. That is why Piaget called this stage the **sensorimotor stage.**

Infants who are three and four months old are fascinated by their own hands and legs. They are easily amused by watching themselves open and close their fists. If they hear an interesting sound, such as a rattle, they might do something to sustain the sound. By four to eight months, infants are exploring cause-and-effect relationships. They might, for example, hit mobiles that hang over their cribs so that the mobiles will move.

Perhaps you have heard the expression "Out of sight, out of mind." Before infants are six months old, objects out of their sight are truly out of their minds. The infants do not realize that objects out of sight still exist. They might stare at a rattle, but if you were to put the rattle behind a piece of paper, they would not look or reach to find it. By eight months to a year, however, infants understand that things that have been taken away still exist. A 10-month-old probably would search for a rattle that was hidden behind a screen. Piaget called this **object permanence**—the understanding that objects exist even when they cannot be seen or touched.

According to Piaget's theory, object permanence occurs because infants are able to hold an idea in mind. For example, they learn that "rattle" is a shiny, noisy object. They can mentally picture a rattle even when it is no longer in view. Therefore, they know to look for it when it is hidden behind a screen.

PIAGET'S STAGES OF COGNITIVE DEVELOPMENT QUICK FACTS

Stage	Age	Characteristics
Sensorimotor Stage	0–2	• Learning to coordinate sensation and perception with motor activity • Development of object permanence
Preoperational Stage	2–7	• One-dimensional thinking • Displays of egocentrism, artificialism, and animism
Concrete-Operational Stage	7–12	• Signs of adult thinking about specific objects but not abstract ideas • Reduced egocentrism
Formal-Operational Stage	12+	• Capable of abstract thinking • Able to deal with hypothetical situations, strategize, and plan ahead to solve problems

Skills Focus **INTERPRETING CHARTS** In what stage do people move from understanding objects to understanding complex ideas? Explain.

The Preoperational Stage The sensorimotor stage ends at about the age of two years, when children begin to use words and symbols (language) to represent objects. At this point, children enter the **preoperational stage.**

Preoperational thinking is very different from more mature forms of thinking. Children's views of the world are different from those of adolescents and adults. Preoperational children think in one dimension—they can see only one aspect of a situation at a time. This is evident in the fact that they do not understand the law of conservation. The law says that key properties of substances, such as their weight, volume, and number, stay the same even if their shape or arrangement are changed. That is, the basic properties are *conserved.* Children in the preoperational stage cannot comprehend all the aspects at once, so they focus only on the most obvious one—the way a substance looks.

When preoperational children are shown two identical tall, thin glasses of water, each filled to the same level, they know that both glasses hold the same amount of water. However, if water from one of the tall glasses is poured into a short, squat glass, the children say that the other tall glass contains more liquid than the short one. They say this even if they have *watched* the water being poured. Because they can focus only on what they are seeing at a given moment—and on one dimension at a time—they incorrectly think that the tall glass now contains more water than the short glass. Their thinking is that it looks as if there is less water in the short glass (because the water level is lower) and therefore it must be so. Children in the preoperational stage do not realize that increases in one dimension (such as width) can make up for decreases in another (such as height).

Another characteristic of children in the preoperational stage is egocentrism—the inability to see another person's point of view. Preoperational children assume that other people see the world just as they do. They cannot imagine that things might happen to others that do not happen to them. They think that the world exists to meet their needs. Egocentrism is a consequence of the preoperational child's one-dimensional thinking. Egocentrism is not the same as selfishness. When a preschooler sits down in front of the TV blocking everyone else's view, he or she is not being rude. The child simply thinks you can see exactly what he or she can see.

Preoperational children are also artificialistic and animistic. That is, they think that natural events such as rain and thunder are made by people (artificialism). They also think objects such as the sun and the moon are alive and conscious (animism).

EXAMPLES OF PREOPERATIONAL THINKING

QUICK FACTS

At the preoperational stage, children are self-centered. They also think that objects are alive, and people are responsible for the workings of nature.

Kind of Thinking	Sample Questions	Typical Answers
Egocentric	Why does the sun shine? Why is grass green? What are TV sets for?	To keep me warm Because that's my favorite color To watch my favorite cartoons
Artificialistic	Why do stars twinkle? Why do trees have leaves? Where do boats go at night?	Because they're happy To keep them warm They go to sleep, like me
Animistic	Why is the sky blue? Where do mountains come from? What is the wind?	Somebody painted it A giant built them A person blowing

Thinking Critically How might children in the concrete-operational stage answer the questions in the "Egocentric" area of the chart?

The Concrete-Operational Stage Most children enter the **concrete-operational stage** at about the age of seven. In this stage, children begin to show signs of adult thinking. Yet they are logical only when they think about specific objects and concrete experiences, not about abstract ideas. This is one reason why many teachers assign them hands-on projects. Seeing, touching, and manipulating objects often help concrete-operational children understand abstract concepts.

Children at the concrete-operational stage can focus on two dimensions of a problem at the same time. For this reason, they understand the laws of conservation. They understand that a short, wide glass might contain the same amount of water as a tall, thin glass. They can therefore recognize that a gain in width compensates for a loss in height.

Concrete-operational children are less egocentric than children in earlier stages. They can see the world from another person's point of view. They understand that people may see things differently because they have different experiences or are in different situations.

The Formal-Operational Stage The final cognitive stage in Piaget's theory begins at about age eleven or twelve and continues through adulthood. It is the **formal-operational stage,** which represents cognitive maturity.

People in the formal-operational stage think abstractly. They realize that ideas can be compared and classified mentally just as objects can. For example, they understand what is meant by the unknown quantity x in algebra. They can work on geometry problems about lines, triangles, and squares without concerning themselves with how the problems relate to the real world. They can also deduce rules of behavior from moral principles. They focus on many aspects of a situation simultaneously when reasoning and solving problems.

During the formal-operational stage, people are capable of dealing with hypothetical situations. They realize that they may be able to control the outcome of a situation in several different ways. Therefore, if one approach to solving a problem does not work, they will try another. They think ahead, imagining the results of different courses of action before they decide on a particular one.

Criticism of Piaget's Theories A number of psychologists have questioned the accuracy of Piaget's views. Some believe his methods caused him to underestimate the abilities of children. Recent research using different methodology indicates that preschoolers are less egocentric than Piaget's research suggested. Some psychologists also assert that several cognitive skills appear to develop more continuously than Piaget thought. Nonetheless, his theories are still respected.

ACADEMIC VOCABULARY
abstract not part of concrete existence; theoretical

Reading Checks **Recall** What are the stages of Piaget's theory of cognitive development?

Kohlberg's Theory of Moral Development

Psychologist Lawrence Kohlberg (1927–1987) devised a cognitive theory about the development of children's moral reasoning. Kohlberg used the following story in his research:

A woman was near death from a special kind of cancer. There was one drug that the doctors thought might save her. It was a form of radium that a pharmacist in the same town had recently discovered. The drug was expensive to make, but the pharmacist was charging 10 times what the drug cost him to make. He paid $200 for the radium and charged $2,000 for a small dose of the drug. The sick woman's husband, Heinz, tried to borrow the money, but he could raise only about $1,000. He told the pharmacist that his wife was dying and asked him to sell it cheaper or let him pay later. But the pharmacist rejected the man's plea saying that he had discovered the drug and intended to make money from it. Heinz became desperate and broke into the man's store to steal the drug for his wife.

Should Heinz have stolen the drug? Was he right or wrong? Kohlberg believed there was no simple answer. Heinz was involved in what Kohlberg called a moral dilemma. In this case, laws against stealing contradicted Heinz's strong human desire to save his wife.

Kohlberg was not particularly interested in whether children thought Heinz was right or wrong. More important to Kohlberg were the reasons why children thought Heinz should or should not steal the drug. Kohlberg classified these reasons according to levels of moral development.

As a stage theorist, Kohlberg believed that the stages of moral development always follow a specific sequence. Children advance at different rates, however, and not everyone reaches the highest stage. Kohlberg theorized that there are three levels of moral development and two stages within each level.

The Preconventional Level According to Kohlberg, through the age of nine, most children are at the preconventional level of moral development. Children who use **preconventional moral reasoning** base their judgments on the consequences of behavior.

In stage 1, children believe that what is "good" is what helps one avoid punishment. Therefore, children at stage 1 would argue that Heinz was wrong because he would be caught for stealing and sent to jail.

At stage 2, "good" is what satisfies a person's needs. Stage 2 reasoning holds that Heinz was right to steal the drug because his wife needed it.

The Conventional Level People who are at the level of **conventional moral reasoning** make judgments in terms of whether an act conforms to conventional standards of right and wrong. These standards derive from the family, religion, and society at large.

At stage 3, "good" is what meets one's needs and the expectations of other people. Moral behavior is what most people would do in a given situation. According to stage 3 reasoning, Heinz should steal the drug because a good and loving husband would do whatever he could to save the life of his wife. But stage 3 reasoning might also maintain that Heinz should not steal the drug because good people do not steal. Both conclusions show conventional thinking. Kohlberg found stage 3 moral judgments most often among 13-year-olds.

Stage 4 moral judgments are based on maintaining the social order. People in this stage have high regard for authority. Stage 4 reasoning might insist that breaking the law for any reason sets a bad example and undermines the social order. Stage 4 judgments occurred most often among 16-year-olds.

The Postconventional Level Reasoning based on a person's own moral standards of goodness is called **postconventional moral reasoning.** Here, moral judgments reflect one's personal values, not conventional standards.

Stage 5 reasoning recognizes that laws represent agreed-upon procedures, that laws have value, and that they should not be violated without good reason. But laws cannot bind the individual in exceptional circumstances. Stage 5 reasoning might suggest that it is right for Heinz to steal the drug, even though it is against the law, because the needs of his wife have created an exceptional situation.

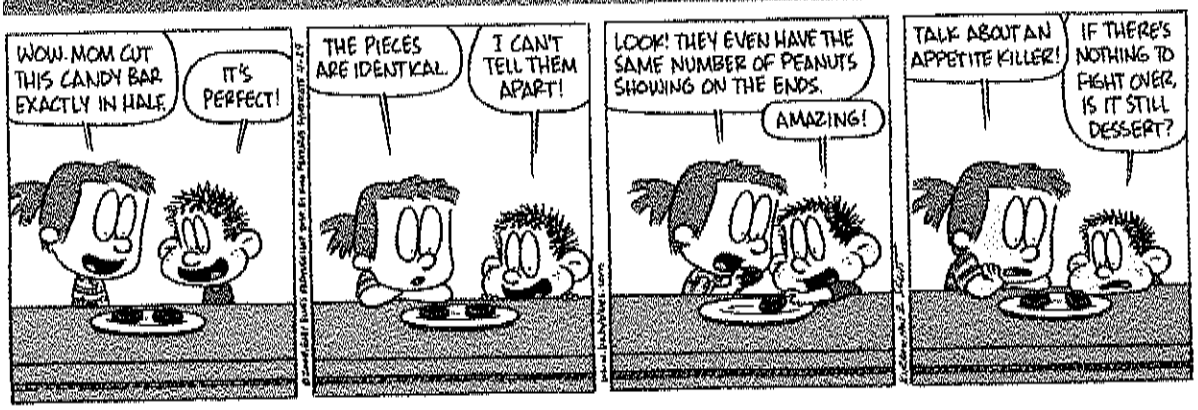
Stage 6 reasoning regards acts that support human life, justice, and dignity as moral and good. People at stage 6 rely on their own consciences. They do not necessarily obey laws or agree with other people's opinions. Using

KOHLBERG'S STAGES OF MORAL DEVELOPMENT

QUICK FACTS

Level	Stage	Moral Reasoning Goal	What is Right?
Preconventional	1	Avoiding punishment	Doing what is necessary to avoid punishment
	2	Satisfying needs	Doing what is necessary to satisfy one's needs
Conventional	3	Winning approval	Seeking and maintaining the approval of others using conventional standards of right and wrong
	4	Law and order	Moral judgments based on maintaining social order High regard for authority
Postconventional	5	Social order	Obedience to accepted laws Judgments based on personal values
	6	Universal ethics	Morality of individual conscience, not necessarily in agreement with others

Piaget or Kohlberg?



Skills Focus **INTERPRETING CARTOONS** Does the behavior of these kids reflect a stage of development from Piaget or Kohlberg? Explain.

stage 6 reasoning, a person might argue that the pharmacist was acting out of greed and that survival is more important than profit. So Heinz had a moral right to steal the drug to save his wife. Postconventional reasoning rarely occurs in adolescents and is found most often in adults.

Bias in Kohlberg's Theory Some studies have found that according to Kohlberg's stages, boys appear to reason at higher levels of moral development than do girls. Does this mean that boys are morally superior to girls? No. It may mean instead that Kohlberg's stages and scoring system were biased to favor males.

Psychologist Carol Gilligan argues that the differences between boys and girls are created because of what adults teach children about how they should behave as boys or girls. For example, girls are often taught to consider the needs of others over simple right or wrong. Therefore, a girl might worry that both stealing the drug and letting Heinz's wife die are wrong. Such reasoning—involving empathy for others—would be classified as stage 3.

Boys, however, are often taught to argue logically rather than with empathy. Therefore, a boy might set up an equation to prove that life has greater value than property. This would be considered reasoning at stage 5 or even stage 6.

Gilligan suggests, however, that girls' reasoning is at as high a level as that of boys. Girls have, in fact, thought about the same kinds of issues boys considered. In the end, they have chosen to be empathetic, not because their thinking is simpler, but because it is very complex—and because of what they have been taught is appropriate for girls.

Reading Check **Describe** How does moral reasoning change throughout Kohlberg's stages?

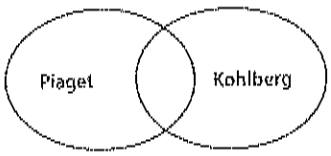
SECTION 4 Assessment

Reviewing Main Ideas and Vocabulary

1. **Define** What is object permanence?
2. **Explain** What does a child consider to be "good" in stage 2 of Kohlberg's theory?
3. **Summarize** What is the major case for bias in Kohlberg's theory?

Thinking Critically

4. **Contrast** Contrast Piaget's ideas of assimilation and accommodation. What makes them different?
5. **Elaborate** Why do children in the concrete operational stage of development have problems dealing with the algebraic idea of an unknown quantity?
6. **Compare and Contrast** Using your notes and a graphic organizer like the one shown, compare and contrast the theories of Piaget and Kohlberg. In what ways are they different, and where do they seem to overlap?



FOCUS ON WRITING

7. **Descriptive** People at stage 6 moral reasoning do not obey laws that go against their conscience. Write a paragraph giving your opinion of what the world would be like if everyone acted in this way.

Prenatal and Postnatal Development

Use the workbook to complete this lab.

How do fetuses and infants develop in the United States and in other parts of the world?

1. Introduction

In this chapter, you have learned about the range of ways in which children develop. In particular, you learned about the physical development of children, beginning in the womb and continuing through the blossoming of fine motor skills. Physical development is for the most part dictated by heredity. It is primarily a natural, biological process with some built-in variation that reflects each individual's genetic makeup. You also read, however, that cultural factors have a role to play in physical development. In Uganda, for example, infants walk two months earlier, on average, than do children in the United States. Possible reasons given for this include the amount of time and the manner in which Ugandan babies are carried by their parents—environmental factors.

In this lab, you will look more closely at both fetal and infant development. Aside from the biological elements of physical development, you will also try to find more examples of how environment plays a role in the process.

- Your teacher will organize the class into two groups. Group A will research prenatal (before birth) physical development. Group B will research postnatal (after birth) physical development.
- Once the research is complete, each group will give oral presentations of their findings.

When this project is complete, you should have a much greater knowledge of early human development not just in the United States, but in other cultures as well.

2. Form Groups and Research

Once your teacher has organized the class into group A and group B, it is time to assign duties within the group.

Group A, which will research prenatal development should organize itself into three teams. Each team will research a three-month period of the nine months of prenatal development.

- Get started by reviewing the pertinent information in Section 2.
- Use the Internet and the library to find information on your period of development.
- Find out what organs, systems, and other notable body parts are present (or not present) at the stage you're researching.
- Of what activities is the fetus capable during the time assigned to you? Can it move? What body systems are functioning?

Group B, which will research postnatal development, should organize itself into four teams. Each team will research a six-month period of the first two years of postnatal development.

- Get started by reviewing the pertinent information in Section 2.
- Use the Internet and the library to find information on your period of development.
- Find out what reflexes are present. A few are listed in the chapter, but you should find others.
- What internal development continues after birth? Are many organs and systems still less than completely developed?
- To what extent are the sensory organs developed, and when do they become useful?

These are suggested areas of research, but each group should be creative in finding and presenting information. Try to have one or more visual aids to liven up your presentation.