CHAPTER

Learning Outcomes

LO 1 Explain prenatal development and the role that sex hormones play

LO 2 Explain the physical, cognitive, moral, social, and emotional development of children

LO 3 Explain the physical, cognitive, moral, social, and emotional development of adolescents

LO 4 Explain the physical, cognitive, moral, social, and emotional development of adults

The Voyage Through the Life Span
We have a story to tell. An important story. A fascinating story. It is your story. It is about the remarkable voyage you have already taken through childhood and adolescence. It is about the unfolding of your adult life. Billions have made this voyage before. You have much in common with them. Yet you are unique, and things will happen to you, and because of you, that have never happened before.

Developmental psychologists are interested in studying our voyage through the life span for several reasons. The discovery of early influences and developmental sequences helps psychologists understand adults. Psychologists are also interested in the effects of genetic factors, early interactions with parents and siblings, and the school and community on traits such as aggressiveness and intelligence.

Developmental psychologists seek to learn the causes of developmental abnormalities. For example, should pregnant women abstain from smoking and drinking? (Yes.) Is it safe for a pregnant woman to take aspirin for a headache or tetracycline to ward off a bacterial infection? (Perhaps not. Ask your obstetrician.) What factors contribute to child abuse? Some developmental psychologists focus on adult development. For example, what conflicts and disillusionments can we expect as we voyage through our thirties, forties, and fifties? The information acquired by developmental psychologists can help us make decisions about how we rear our children and lead our own lives.

Let us now turn to prenatal developments—the changes that occur between conception and birth. They are spectacular, but they occur “out of sight.”

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**Truth or Fiction?**

Folklore, common sense, or nonsense? Place a T for “True” or F for “False” on the lines provided (you’ll learn the answers as you read through the text).

- T __ Your heart started beating when you were only one-fifth of an inch long and weighed a fraction of an ounce.
- F __ Prior to six months or so of age, “out of sight” is literally “out of mind.”
- T __ The architect Frank Lloyd Wright designed New York’s innovative spiral-shaped Guggenheim Museum when he was sixty-five years old.
- F __ Alzheimer’s disease is a normal part of aging.
uterus. The ball-like mass of multiplying cells wanders about the uterus for another three to four days before beginning to implant in the uterine wall. Implantation takes another week or so. The period from conception to implantation is called the germinal stage.

The embryonic stage lasts from implantation until about the eighth week of development. During this stage, the major body organ systems take form. As you can see from Figure 3.1, the growth of the head precedes that of other parts of the body. The growth of the organs—heart, lungs, and so on—also precedes the growth of the extremities. The relatively early maturation of the brain and the organ systems allows them to participate in the nourishment and further development of the embryo. The heart will continue to beat without rest every minute of every day for most of a century, perhaps longer.

During the second month, the nervous system begins to transmit messages. By five to six weeks, the embryo is only a quarter-inch to a half-inch long, yet nondescript sex organs have formed. By about the seventh week, the genetic code (XY or XX) begins to assert itself, causing the sex organs to differentiate. If a Y sex chromosome is present, testes form and begin to produce androgens (male sex hormones), which further masculinize the sex organs. In the absence of these hormones, the embryo develops sex organs typical of the female, regardless of its genetic code. However, individuals with a male genetic code would be sterile. By the end of the second month, the head has become rounded and the facial features distinct—all in an embryo that is about one inch long and weighs one-thirtieth of an ounce.

As it develops, the embryo is suspended within a protective amniotic sac in the mother’s uterus. The sac is surrounded by a clear membrane and contains amniotic fluid. The fluid is a sort of natural air bag, allowing the child to move or even jerk around without injury. It also helps maintain an even temperature.

Truth

During the fourth week, a primitive heart begins to beat and pump blood—in an organism that is one-fifth of an inch long.
From now until birth, the embryo exchanges nutrients and wastes with the mother through the **placenta**. The embryo is connected to the placenta by the **umbilical cord**. The placenta is connected to the mother by blood vessels in the uterine wall.

The **fetal stage** lasts from the beginning of the third month until birth. By the end of the third month, the major organ systems and the fingers and toes have formed. In the middle of the fourth month, the mother usually detects the first fetal movements. By the end of the sixth month, the fetus moves its limbs so vigorously that mothers often feel that they are being kicked. The fetus opens and shuts its eyes, sucks its thumb, alternates between periods of being awake and sleeping, and responds to light. It also turns somersaults, which can be perceived by the mother.

During the three months prior to birth, the organ systems of the fetus continue to mature. The heart and lungs become increasingly capable of sustaining independent life. The fetus gains about five-and-a-half pounds and doubles in length. Newborn boys average about seven-and-a-half pounds and newborn girls about seven pounds.

**LO² Childhood**

Childhood begins with birth. When my children are enjoying themselves, I kid them and say, “Stop having fun. You’re a child, and childhood is the worst time of life.” I get a laugh because they know that childhood is supposed to be the best time of life—a time for play and learning and endless possibilities. In this section we see that childhood is an exciting time of physical, cognitive, and social and emotional developments.

**Physical Development**

During infancy—the first two years of childhood—dramatic gains in height and weight continue. Babies usually double their birth weight in about five months and triple it by their first birthday (Kuczmarski et al., 2000). Their height increases by about ten inches in the first year. Children grow another four to six inches during the second year and gain some four to seven pounds. After that, they gain about two to three inches a year until they reach the adolescent growth spurt. Weight gains also remain fairly even at about four to six pounds per year until the spurt. Other aspects of physical development in childhood include reflexes and perceptual development.

**Reflexes**

Soon after you were born, a doctor or nurse probably pressed her fingers against the palms of your hands. Although you would have had no idea what to do in response, most likely you grasped the fingers firmly—so firmly that you could have been lifted from your cradle! Grasping at birth is inborn, an example of the importance of nature in human development. Grasping is one of the baby’s reflexes. Reflexes are simple, unlearned, stereotypical responses elicited by specific stimuli. Newborn children do not know that it is necessary to eat to survive. Fortunately, rooting and sucking reflexes cause them to eat. They turn their head toward stimuli that prod or stroke the cheek, chin, or corner of the mouth. This is termed **rooting**. They suck objects that touch their lips. Reflexes are essential to survival and occur automatically—that is, without thinking about them.

Newborns use the withdrawal reflex to avoid painful stimuli. In the startle, or Moro, reflex, they draw up their legs and arch their backs in response to sudden noises, bumps, or loss of support while being held. They grasp objects that press against the palms of their hands (the grasp, or palmar, reflex). They fan their toes when the soles of their feet are stimulated (the Babinski reflex). Pediatricians test these reflexes to assess babies’ neural functioning. Babies also breathe, sneeze, cough, yawn, blink, defecate, and urinate reflexively.

**Motor Development**

The motor development of the child refers to the progression from simple acts like lifting the head to running around. Maturation and experience both
play key roles in motor development (Muir, 2000; Pryce et al., 2001; Roncesvalles et al., 2001). Maturation of the brain is a key to motor development. Motor development provides some of the most fascinating changes in infants, in part because so much seems to happen so quickly—and so much of it during the first year. Children go through a sequence that includes rolling over, sitting up, crawling, creeping, walking, and running. The ages at which infants first engage in these activities vary, but the sequence generally remains the same (see Figure 3.2). Invariant sequences suggest an unfolding of the genetic code (maturation).

The role of maturation in areas such as physical development (for example, gains in height and weight and the effects of puberty), language development, and motor development is clear. But environmental factors are also involved. Children may have certain genetic potentials for body size and growth rates, but they do not reach them unless environmental factors such as nutrition, relatively clean air, and so on are available. Children do not understand or produce language until their genetic codes spark the development of certain structures and processes in the brain. But the environment is also involved. Children learn the languages used in their homes and communities. They do not speak foreign tongues without being exposed to them.

**Perceptual Development**

Newborn children spend about sixteen hours a day sleeping and do not have much opportunity to learn about the world. Yet they perceive the world reasonably well soon after birth. Within a couple of days, infants can follow, or “track,” a moving light with their eyes (Kellman & von Hofsten, 1992). By three months, they can discriminate most colors (Banks & Shannon, 1993; Teller, 1998). Newborns are nearsighted, but by about four months, infants focus on distant objects about as well as adults do.

The visual preferences of infants are measured by the amount of time, termed fixation time, they spend looking at one stimulus instead of another. In classic research by Robert Fantz (1961), two-month-old infants preferred visual
stimuli that resembled the human face to news print, a bull’s eye, and featureless red, white, and yellow disks (see Figure 3.3).

Classic research has shown that infants tend to respond to cues for depth by the time they are able to crawl (at about six to eight months). Most also have the good sense to avoid crawling off ledges and table tops into open space (Campos et al., 1978).

Normal newborns hear well. Most newborns reflexively turn their heads toward unusual sounds. This finding, along with findings about visual tracking, suggests that infants are preprogrammed to survey their environments. Speaking or singing softly in a low-pitched tone soothes infants. This is why lullabies help infants fall asleep.

Three-day-old babies prefer their mother’s voice to those of other women, but they do not show a preference for their father’s voice (DeCasper & Prescott, 1984; Freeman et al., 1993). Babies, of course, have had months of “experience” in the uterus. For at least two or three months before birth, they have been able to hear. Because they are predominantly exposed to sounds produced by their mother, learning may contribute to newborn preferences.

Cognitive Development

The ways in which children mentally represent and think about the world—that is, their cognitive development—are explored in this section. Because cognitive functioning develops over many years, young children have ideas about the world that differ considerably from those of adults. Many of these ideas are charming but illogical—at least to adults. Let us consider three views of cognitive development. We will begin with Jean Piaget’s stage theory of cognitive development. Then we will turn to the views of the Russian psychologist Lev Semenovich Vygotsky whose approach is quite different from Piaget’s but is enjoying a rebirth in popularity. Then we will focus on Lawrence Kohlberg’s theory of moral development.

Jean Piaget’s Cognitive–Developmental Theory

Jean Piaget (1896–1980) earned his Ph.D. in biology. In 1920 he obtained a job at the Binet Institute in Paris, where work on intelligence tests was being conducted. His first task was to adapt English verbal reasoning items for use with French children. To do so, he had to try out the items on children in various age groups and see whether they could arrive at correct answers. The task was boring until Piaget became intrigued by the children’s wrong answers. Another investigator might have shrugged them off, but Piaget perceived patterns in the children’s “mistakes.” The wrong answers reflected consistent, if illogical, cognitive processes. Piaget’s observations led to his theory of cognitive development.

Assimilation A term according to Piaget, the inclusion of a new event into an existing schema.
Infants, for example, usually try to place new objects in their mouth to suck, feel, or explore. Piaget would say that the child is assimilating a new toy to the sucking schema. A **schema** is a pattern of action or a “mental structure” involved in acquiring or organizing knowledge.

**Accommodation** Accommodation is the creation of new ways of responding to objects or looking at the world. In accommodation, children transform existing schemas to incorporate new events. Children (and adults) accommodate to objects and situations that cannot be integrated into existing schemas. For example, children who study biology learn that whales cannot be assimilated into the “fish” schema. They accommodate by constructing new schemas, such as “mammals without legs that live in the sea.”

The ability to accommodate to novel stimuli advances as a result of maturation and experience. Let us apply these concepts to the stages of cognitive development.

**Piaget’s Stages of Cognitive Development**

**What are Piaget’s stages of cognitive development?** Piaget hypothesized that children’s cognitive processes develop in an orderly sequence. Some children may be more advanced than others, but the sequence remains the same. Piaget (1963) identified four major stages of cognitive development: sensorimotor, preoperational, concrete operational, and formal operational.

**The Sensorimotor Stage** The newborn infant is capable of assimilating novel stimuli only to existing reflexes (or ready-made schemas) such as the rooting and sucking reflexes. But by the time an infant reaches the age of one month, he or she already shows purposeful behavior by repeating behavior patterns that are pleasurable, such as sucking his or her hand. During the first month or so, an infant apparently does not connect stimuli perceived through different senses. Reflexive turning toward sources of auditory and olfactory stimulation cannot be considered purposeful searching. But within the first few months the infant begins to coordinate vision with grasping, to look at the object being held or touched.

A three- or four-month-old infant may be fascinated by her own hands and legs. The infant may become absorbed in watching herself open and close her fists. The infant becomes increasingly interested in acting on the environment to make interesting results (such as the sound of a rattle) last longer or occur again. Behavior becomes increasingly intentional and purposeful. Between four and eight months of age, the infant explores cause-and-effect relationships such as the thump made by tossing an object or the swinging that results from kicking a hanging toy.

For most infants younger than six months, objects are not yet represented mentally. For this reason, as you can see in Figure 3.4, a child makes no effort to search for an object that has been removed or placed behind a screen. By the age of eight to twelve months, however, infants realize that objects removed from sight still exist and attempt to find them. In this way, they show what is known as **object permanence**, thereby making it possible to play peekaboo.

Between one and two years of age, children begin to show interest in how things are constructed. It may be for this reason that they persistently touch and finger their parents’ faces and their own. Toward the end of the second year, children begin to engage in mental trial and error before they try out overt behaviors. For example, when they look for an object you have removed, they will no longer begin their search in the last place they saw it. Rather, they may follow you, assuming you are carrying the object even though it is not visible. It is as though they are...
The Preoperational Stage

The preoperational stage is characterized by the use of words and symbols to represent objects and relationships among them. But be warned—any resemblance between the logic of children between the ages of two and seven and your own logic may be coincidental. Children may use the same words as adults, but this does not mean their views of the world are the same.

Preoperational children tend to think one-dimensionally—to focus on one aspect of a problem or situation at a time. One consequence of one-dimensional thinking is egocentrism. Preoperational children cannot understand that other people do not see things the same way they do. When my daughter Allyn was two and a half, I asked her to tell me about a trip to the store with her mother. “You tell me,” she replied. It seemed she did not understand that I could not see the world through her eyes.

To egocentric preoperational children, all the world’s a stage that has been erected to meet their needs and amuse them. When asked, “What are television sets for?”, they may answer, “To watch my favorite shows and cartoons.” Preoperational children also show animism. They attribute life and consciousness to physical objects like the sun and the moon. They also show artificialism. They believe that environmental events like rain and thunder are human inventions. Asked what causes thunder, a four-year-old may reply ‘A man grumbling.’ Examples of egocentrism, animism, and artificialism are shown in Table 3.1.

<table>
<thead>
<tr>
<th>Type of Thought</th>
<th>Sample Questions</th>
<th>Typical Answers</th>
</tr>
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<tbody>
<tr>
<td>Egocentrism</td>
<td>Why does it get dark out?</td>
<td>So I can go to sleep.</td>
</tr>
<tr>
<td></td>
<td>Why does the sun shine?</td>
<td>To keep me warm.</td>
</tr>
<tr>
<td></td>
<td>Why is there snow?</td>
<td>For me to play in.</td>
</tr>
<tr>
<td>Animism</td>
<td>Why do trees have leaves?</td>
<td>To keep them warm.</td>
</tr>
<tr>
<td></td>
<td>Why do stars twinkle?</td>
<td>Because they’re happy and cheerful.</td>
</tr>
<tr>
<td>Artificialism</td>
<td>What makes it rain?</td>
<td>Someone emptying a watering can.</td>
</tr>
<tr>
<td></td>
<td>Why is the sky blue?</td>
<td>Somebody painted it.</td>
</tr>
<tr>
<td></td>
<td>What is the wind?</td>
<td>A man blowing.</td>
</tr>
</tbody>
</table>

To gain further insight into preoperational thinking, find a three- or four-year-old and try these mini-experiments:

- Pour water from a tall, thin glass into a low, wide glass. Now, ask the child whether the low, wide glass contains more, less, or the same amount of water that was in the tall, thin glass. If the child says that they hold the same amount of water, the child is correct. But if the child err, why do you think this is so?
- Now flatten a ball of clay into a pancake, and ask the child whether the low, wide glass contains more, less, or the same amount of clay? If the child errs again, why do you think this is so?
- To arrive at the correct answers to these questions, children must understand the law of conservation. This law holds that basic properties of substances such as mass, weight, and volume remain the same—that is, are conserved—when one changes superficial properties such as their shape or arrangement.

Conservation requires the ability to think about, or center on, two aspects of a situation at once, such as height and width. Conserving the mass, weight, or volume of a substance requires the recognition that a change in one dimension can compensate for a change in another. But the preoperational boy in Figure 3.5 focuses on only one dimension at a time. First he is shown two short, squat glasses of water and agrees that they contain the same amount of water. Then, while he watches, water is poured from a squat glass into a tall, thin glass. Now he is asked which glass contains more water. After mulling over the problem, he points to the tall glass. Why? Because when he looks at the glasses he is “overwhelmed” by the fact that the thinner glass is taller. The preoperational child focuses on the one dimension that is changed.
Piaget would tell children stories and ask them which character was naughtier and why. John, for example, accidentally breaks fifteen cups when he opens a door. Henry breaks one cup when he sneaks into a kitchen cabinet to find forbidden jam. The preoperational child usually judges John to be naughtier. Why? Because he broke more cups.

The Concrete Operational Stage By about age seven, the typical child is entering the stage of concrete operations. In this stage, which lasts until about age twelve, children show the beginnings of the capacity for adult logic. However, their logical thoughts, or operations, generally involve tangible objects rather than abstract ideas. Concrete operational children are capable of decentration; they can center on two dimensions of a problem at once. This attainment has implications for moral judgments, conservation, and other intellectual undertakings.

Concrete operational children understand the laws of conservation. The boy in Figure 3.5, now a few years older, would say that the squat glass still contains the same amount of juice. If asked why, he might reply, "Because you can pour it back into the other one." Such an answer also suggests awareness of the concept of reversibility—the recognition that many processes can be reversed or undone so that things are restored to their previous condition. Centering simultaneously on the height and the width of the glasses, the boy recognizes that the loss in height compensates for the gain in width.

Piaget (1997) found that the moral judgment of preoperational children is one-dimensional. Five-year-olds tend to be slaves to rules and authority. When you ask them why something should be done in a certain way, they may insist, "Because that's the way to do it!" or "Because Mommy says so!" Right is right and wrong is wrong. Why? "Because!"—that's why.

According to most older children and adults, an act is a crime only when there is criminal intent. Accidents may be hurtful, but the perpetrators are usually seen as blameless. But in the court of the one-dimensional, preoperational child, there is objective responsibility. People are sentenced (and harshly!) on the basis of the amount of damage they have done, not their motives or intentions. To demonstrate objective responsibility, Piaget would tell children stories and ask them which character was naughtier and why. John, for example, accidentally breaks fifteen cups when he opens a door. Henry breaks one cup when he sneaks into a kitchen cabinet to find forbidden jam. The preoperational child usually judges John to be naughtier. Why? Because he broke more cups.

**Objective Responsibility**

According to Piaget, the assignment of blame according to the amount of damage done rather than the motives of the actor.

**Concrete Operational Stage**

Piaget's third stage, characterized by logical thought concerning tangible objects, conservation, and subjective morality.

**Decentration**

Simultaneous focusing on more than one dimension of a problem, so that flexible, reversible thought becomes possible.

**Subjective Moral Judgment**

A moral judgment that is based on the motives of the perpetrator.

**Figure 3.5**

Conservation
Children in this stage are less egocentric. They are able to take on the roles of others and to view the world, and themselves, from other people’s perspectives. They recognize that people see things in different ways because of different situations and different sets of values.

During the concrete operational stage, children’s own sets of values begin to emerge and acquire stability. Children come to understand that feelings of love between them and their parents can endure even when someone is temporarily angry or disappointed. We continue our discussion of Piaget’s theory—his stage of formal operations—later in the chapter in the section on adolescence.

**Evaluation of Piaget’s Theory** A number of questions have been raised concerning the accuracy of Piaget’s views. Among them are these:

- **Was Piaget’s timing accurate?** Some critics argue that Piaget’s methods led him to underestimate children’s abilities (Bjorklund, 2000; Meltzoff & Gopnik, 1997). Other researchers using different methods have found, for example, that preschoolers are less egocentric and that children are capable of conservation at earlier ages than Piaget thought.

- **Does cognitive development occur in stages?** Cognitive events such as egocentrism and conservation appear to develop more continuously than Piaget thought—that is, they may not occur in stages (Bjorklund, 2000; Flavell, 2000). Although cognitive developments appear to build on previous cognitive developments, the process may be more gradual than stage-like.

- **Are developmental sequences always the same?** Here, Piaget’s views have fared better. It seems there is no variation in the sequence in which cognitive developments occur.

In sum, Piaget’s theoretical edifice has been rocked, but it has not been reduced to rubble. Now let us consider the views of Vygotsky.

Lev Vygotsky (1896–1934) was a Russian psychologist whose work was banned in communist Russia. Seventy years after his death, his work has been rediscovered. Unlike Piaget, Vygotsky was not a stage theorist. Instead, he saw the transmission of knowledge as cumulative, and focused on the ways in which children’s interactions with their elders enhance their cognitive development.

**Lev Vygotsky’s Sociocultural Theory**

The term sociocultural theory has different meanings. For example, the term can refer to the roles of factors such as ethnicity and gender in behavior and mental processes. Vygotsky’s sociocultural theory focuses instead on the ways in which children’s cognitive development is influenced by the cultures in which they are reared and the people who teach them.

Vygotsky’s theory (1978) focuses on the transmission of information and cognitive skills from generation to generation. The transmission of skills involves teaching and learning, but Vygotsky was no behaviorist. He did not view learning as a mechanical process that can be described in terms of the conditioning of units of behavior. Rather, he focused more generally on how the child’s social interaction with adults, largely in the home, organized the child’s learning experiences in such a way that the child can obtain cognitive skills—such as computation or reading skills—and use them to acquire information. Like Piaget, Vygotsky saw the child’s functioning as adaptive (Piaget & Smith, 2000), and the child adapts to his or her social and cultural interactions.

**What are the key concepts of Vygotsky’s theory of cognitive development?** Key concepts in Vygotsky’s theory include the zone of proximal development and scaffolding. The word proximal means “nearby” or “close,” as in the words approximate and proximity. The zone of proximal development (ZPD) refers to a range of tasks that a child can carry out with the help of someone who is more skilled (Haenen, 2001). The “zone” refers to the relationship between the child’s abilities and what she or he can do with help from others. Adults or older children best guide the child through this zone by gearing their assistance to the child’s capabilities (Flavell et al., 2002).

Within the zone we find an apprenticeship in which the child works with, and learns from, others (Meijer & Elshout, 2001). When learning with others, the child tends to internalize—or bring inward—the conversations and explanations that help him or her gain skills (Prior & Welling, 2001; Vygotsky, 1962; Yang, 2000). Children not only learn the meanings of words from teachers but also learn ways of talking to themselves about solving problems within a cultural context (DeVries, 2000). Outer speech becomes inner speech. What was the teacher’s becomes the child’s. What was a social and cultural context becomes embedded within the child (Moro & Rodriguez, 2000); thus we have the term, sociocultural theory.

A scaffold is a temporary skeletal structure that enables workers to fabricate a building, bridge, or...
which children (and adults) arrive at judgments about what is right and what is wrong.

Lawrence Kohlberg’s Theory of Moral Development

How do children reason about right and wrong? Cognitive–developmental theorist Lawrence Kohlberg (1981) used the following tale in his research into children’s moral reasoning:

In Europe a woman was near death from a special kind of cancer. There was one drug that the doctors thought might save her. It was a form of radium that a druggist in the same town had recently discovered. The drug was expensive to make, but the druggist was charging ten times what the drug cost him to make. He paid $200 for the radium and charged $2,000 for a small dose of the drug. The sick woman’s husband, Heinz, went to everyone he knew to borrow the money, but he could only get together about $1,000, which was half of what it cost. He told the druggist that his wife was dying and asked him to sell it cheaper or let him pay later. But the druggist said: “No, I discovered the drug, and I’m going to make money from it.” So Heinz got desperate and broke into the man’s store to steal the drug for his wife (Kohlberg, 1969).

Heinz is caught in a moral dilemma. In such dilemmas, a legal or social rule (in this case, the law forbidding stealing) is pitted against a strong human need (his desire to save his wife). Children and adults arrive at yes or no answers for different reasons. According to Kohlberg, the reasons can be classified according to the level of moral development they reflect.

As a stage theorist, Kohlberg argues that the stages of moral reasoning follow a specific sequence. Children progress at different rates, and not all children (or adults) reach the highest stage. But the sequence is always the same: Children must go through stage 1 before they enter stage 2, and so on. According to Kohlberg, there are three levels of moral development and two stages within each level.

The Preconventional Level The preconventional level applies to most children through about the age of nine. Children at this level base their moral judgments on the consequences of behavior. For example, stage 1 is oriented toward obedience and punishment. Good behavior is obedient and allows one to avoid punishment. However, a child in stage 1 can decide that Heinz should or should not steal the drug.
In stage 2, good behavior allows people to satisfy their needs and those of others. (Heinz’s wife needs the drug; therefore, stealing it—the only way of obtaining it—is not wrong.)

The Conventional Level In the conventional level of moral reasoning, right and wrong are judged by conformity to conventional (familial, religious, societal) standards of right and wrong. According to the stage 3 “good-boy orientation,” moral behavior is that which meets the needs and expectations of others. Moral behavior is what is “normal”—what the majority does. (Heinz should steal the drug because that is what a “good husband” would do. It is “natural” or “normal” to try to help one’s wife. Or Heinz should not steal the drug because “good people do not steal.”)

In stage 4, moral judgments are based on rules that maintain the social order. Showing respect for authority and doing one’s duty are valued highly. (Heinz must steal the drug; it would be his fault if he let his wife die. He would pay the druggist later, when he had the money.) Many people do not mature beyond the conventional level.

The Postconventional Level Postconventional moral reasoning is more complex and focuses on dilemmas in which individual needs are pitted against the need to maintain the social order and on personal conscience. We discuss the postconventional level later in the chapter in the section on adolescence.

Evaluation of Kohlberg’s Theory

As Kohlberg’s theory predicts, evidence supports the view that the moral judgments of children develop in an upward sequence (Boom et al., 2007). Postconventional thought, if found at all, first occurs in adolescence. Formal-operational thinking is apparently a prerequisite, and education is likely to play a role (Boom et al., 2007; Patenaude et al., 2003). Postconventional reasoning involves understanding of abstract moral principles and empathy with the views and feelings of others.

Kohlberg believed that the stages of moral development were universal, but he may have underestimated the influence of social, cultural, and educational institutions (Dawson, 2002). Parents are also important. Using reason in discipline and discussing the feelings of others advance moral reasoning (Dawson, 2002).

Social and Emotional Development

Social relationships are crucial to us as children. When we are infants, our very survival depends on them. Later in life, they contribute to our feelings of happiness and satisfaction. In this section we discuss aspects of social development, including Erikson’s theory of psychosocial development, attachment, and styles of parenting.

Erik Erikson’s Stages of Psychosocial Development

According to Erik Erikson, we undergo several stages of psychosocial development. What are Erikson’s stages of psychosocial development? During Erikson’s first stage, trust versus mistrust, we depend on our primary caregivers (usually our parents) and come to expect that our environments will—or will not—meet our needs. During early childhood and the preschool years, we begin to explore the environment more actively and try new things. At this time, our relationships with our parents and friends can encourage us to develop autonomy (self-direction) and initiative, or feelings of shame and guilt. During the elementary school years, friends and teachers take on more importance, encouraging us to become industrious or to develop feelings of inferiority. We will return to Erikson’s stages of development later in the chapter.

Attachment

Psychologist Mary D. Salter Ainsworth (1913–1999) defined attachment as an emotional tie that is formed between one animal or person and another specific individual. Attachment keeps organisms together—it is vital to the survival of the infant—and it tends to endure. The behaviors that define attachment include (1) attempts to maintain contact or nearness, and (2) shows of anxiety when separated. Babies and children try to maintain contact with caregivers to whom they are attached. They engage in eye contact, pull and tug at them, ask to be picked up, and may even jump in front of them in such a way that they will be “run over” if they are not picked up. How do feelings of attachment develop? What kinds of experiences affect attachment?
The Strange Situation and Patterns of Attachment

The ways in which infants behave in strange situations are connected with their bonds of attachment with their caregivers. Given this fact, Ainsworth and her colleagues (1978) innovated the strange situation method to learn how infants respond to separations and reunions with a caregiver (usually the mother) and a stranger. Using this method, Ainsworth and her colleagues identified three major types of attachment, including secure attachment and two types of insecure attachment:

1. Secure attachment. Securely attached infants mildly protest their mother’s departure, seek interaction upon reunion, and are readily comforted by her.

2. Avoidant attachment. Infants who show avoidant attachment are least distressed by their mother’s departure. They play by themselves without fuss and ignore their mothers when they return.

3. Ambivalent/resistant attachment. Infants with ambivalent/resistant attachment are the most emotional. They show severe signs of distress when their mother leaves and show ambivalence upon reunion by alternating clinging to and pushing their mother away when she returns.

Attachment is connected with the quality of care that infants receive. The parents of securely attached children are more likely to be affectionate and reliable caregivers (Isabella, 1998; Posada et al., 2002). A wealth of research literature speaks of the benefits of secure attachment. For example, secure children are happier, more sociable, and more cooperative than insecure children (Bohlin et al., 2000). At ages five and six, securely attached children are liked better by their peers and teachers, are more competent, and have fewer behavior problems than insecurely attached children (Granot & Mayeless, 2001; Moss & St-Laurent, 2001). In this vein, we can also note that having the primary caregiver present during stressful situations, such as pediatric exams, helps children cope with these situations (Ybarra et al., 2000).

Stages of Attachment

Ainsworth and her colleagues observed infants in many societies, including the African country of Uganda. She noted the efforts of infants to maintain contact with the mother, their protests when separated from her, and their use of her as a base for exploring their environment. At first, infants show indiscriminate attachment. That is, they prefer being held or being with someone to being alone, but they are generally willing to be held by unfamiliar people. Specific attachment to the primary caregiver begins to develop at about four months of age and becomes intense by about seven months of age. Fear of strangers, which develops in some but not all children, follows one or two months later.

From studies such as these, Ainsworth identified three phases of attachment:

1. The initial-preadaptation phase, which lasts from birth to about three months and is characterized by indiscriminate attachment.

2. The attachment-in-the-making phase, which occurs at about three or four months and is characterized by preference for familiar figures.

3. The clear-cut-attachment phase, which occurs at about six or seven months and is characterized by intensified dependance on the primary caregiver. Fear of strangers, which develops in some but not all children, follows one or two months later.

Theoretical Views of Attachment

Early in the 20th century, behaviorists argued that attachment behaviors are learned through experience. Caregivers feed their infants and tend to their other physiological needs. Thus, infants associate their caregivers with gratification of needs and learn to approach them to meet their needs. The feelings of gratification associated with the meeting of basic needs generalize into feelings of security when the caregiver is present.

However, classic research by psychologist Harry F. Harlow suggests that skin contact may be more important than learning experiences. Harlow noted that infant rhesus monkeys reared without mothers or companions became attached to pieces of cloth in their cages. They maintained contact with them and showed distress when separated from them. Harlow conducted a series of experiments to find out why (Harlow, 1959).

In one study, Harlow placed infant rhesus monkeys in cages with two surrogate mothers, as shown in Figure 3.6. One “mother” was made of wire mesh from which a baby bottle was extended. The other surrogate mother was made of soft, cuddly terrycloth. The infant monkeys spent most of their time clinging to the cloth mother, even though “she” did not gratify their need for food. Harlow concluded that monkeys—and perhaps humans—have an inborn need for contact comfort that is as basic as the need for food. Gratification of the need for contact comfort, rather than food, might be why infant monkeys (and humans) cling to their mothers.

Other researchers, such as ethologist Konrad Lorenz, argue that for many animals, attachment is an instinct—inborn. (Ethologists study the behavioral characteristics of various species of animals.) Attachment, like other instincts, is theorized to
occur in the presence of a specific stimulus and during a critical period of life—that is, a period during which the animal is sensitive to the stimulus.

Some animals become attached to the first moving object they encounter. The formation of an attachment in this manner is therefore called imprinting. Lorenz (1981) became well known when pictures of his “family” of goslings were made public. How did Lorenz acquire his following? He was present when the goslings hatched and during their critical period, and he allowed them to follow him. The critical period for geese and some other animals is bounded, at the younger end, by the age at which they first walk and, at the older end, by the age at which they develop fear of strangers. The goslings followed Lorenz persistently, ran to him when frightened, honked with distress at his departure, and tried to overcome barriers between them. If you substitute crying for honking, it all sounds rather human.

Ainsworth and Bowlby (1991) consider attachment to be instinctive in humans. However, among humans attachment is less related to issues such as locomotion and fear of strangers (which is not universal). Moreover, the critical period with humans is quite extended.

Parenting Styles

Many psychologists have been concerned about the relationships between parenting styles and the personality development of the child. What types of parental behavior are connected with variables such as self-esteem, achievement motivation, and independence in children? Diana Baumrind (1973) has been particularly interested in the connections between parental behavior and the development of instrumental competence in their children. (Instrumental competence refers to the ability to manipulate the environment to achieve one’s goals.) Baumrind has focused largely on four aspects of parental behavior: (1) strictness; (2) demands for the child to achieve intellectual, emotional, and social maturity; (3) communication ability; and (4) warmth and involvement. She labeled the three parenting styles the authoritative, authoritarian, and permissive styles. Other researchers also speak of the uninvolved style. These four styles are defined in the following ways:

1. Authoritative parents. The parents of the most competent children rate high in all four areas of behavior. They are strict (restrictive) and demand mature behavior. But they temper their strictness with desire to reason with their children and with love and support (Galambos et al., 2003). They expect much, but they explain why and offer help. Baumrind labeled these parents authoritative parents to suggest that they know what they want but are also loving and respectful to their children.

2. Authoritarian parents. Authoritarian parents view obedience as a virtue for its own sake. They have strict guidelines about what is right and wrong, and they demand that their children stick to them. Both authoritative and authoritarian parents have strict standards, but authoritative parents explain their demands and are supportive, whereas authoritarian parents rely on force and communicate poorly with their children. Authoritarian parents...
Lo3 Adolescence

Perhaps no other period of life is as exciting—and as bewildering—as adolescence. Adolescence is bounded by puberty and the assumption of adult responsibilities. Except for infancy, more changes occur during adolescence than during any other time. Like childhood, adolescence entails physical, cognitive, social, and emotional changes.

Physical Development

What physical developments occur during adolescence?

One of the most noticeable physical developments of adolescence is a growth spurt that lasts two to three years and ends the gradual changes in height and weight that characterize most of childhood. Within this short span of years, adolescents grow some eight to twelve inches. Most boys wind up taller and heavier than most girls.

In boys, the weight of the muscle mass increases notably. The width of the shoulders and circumference of the chest also increase. Adolescents may eat enormous quantities of food to fuel their growth spurt.

Brain imaging studies show that adolescents’ frontal lobes—the seat of executive functioning—are less active than those of adults. Their amygdalas, a part of the limbic system involved in emotions, are more active than adults’. These adolescent-adult differences in brain development may explain, at least in part, why many adolescents do not show the judgment, insight, and reasoning ability of adults.

Puberty: More Than “Just a Phase”?

Puberty is the period during which the body becomes sexually mature. It heralds the onset of adolescence. Puberty begins with the appearance of secondary sex characteristics such as body hair, deepening of the voice in males, and rounding of the breasts and hips in females. In boys, pituitary hormones stimulate the testes to increase the output of testosterone, which in turn causes enlargement of the penis and testes and the appearance of body hair. By the early teens, erections become common, and boys may ejaculate. Ejaculatory ability usually precedes the presence of mature sperm by at least a year. Ejaculation thus is not evidence of reproductive capacity.

In girls, a critical body weight in the neighborhood of 100 pounds is thought to trigger a cascade of hormonal secretions in the brain that cause the ovaries to secrete higher levels of the female sex hormone, estrogen (Frisch, 1997). Estrogen stimulates the growth of breast tissue and tissue in the hips and buttocks. The pelvis widens, rounding the hips. Small amounts of androgens produced by the adrenal glands, along with estrogen, spur the growth of pubic and underarm hair. Estrogen and androgens also stoke the development of female sex organs. Estrogen production becomes cyclical during puberty and regulates the menstrual
cycle. The beginning of menstruation, or menarche, usually occurs between eleven and fourteen. Girls cannot become pregnant until they ovulate, however, and ovulation may begin two years after menarche.

**Cognitive Development**

The adolescent thinker approaches problems differently from the elementary school child. What cognitive developments occur during adolescence? Let us begin to answer this question by comparing the child’s thought processes to those of the adolescent. The child sticks to the facts, to concrete reality. Speculating about abstract possibilities and what might be is very difficult. The adolescent, on the other hand, is able to deal with the abstract and the hypothetical. In this section we explore some of the cognitive developments of adolescence by referring to the views of Piaget and Kohlberg.

**The Stage of Formal Operations**

According to Piaget, children undergo three stages of cognitive development prior to adolescence: sensorimotor, preoperational, and concrete operational. The stage of formal operations is the final stage in Piaget’s theory, and it represents cognitive maturity. For many children in Western societies, formal operational thought begins at about the beginning of adolescence—the age of eleven or twelve. Some people enter this stage later, however, and some never do.

The major achievements of the stage of formal operations involve classification, logical thought, and the ability to hypothesize. Central features are the ability to think about ideas as well as objects and to group and classify ideas—symbols, statements, entire theories. Adolescents can generally follow arguments from premises to conclusions and back again. They can generally appreciate both the outer environment and the world of the imagination: they engage in hypothetical thinking and deductive reasoning.

Formal operational adolescents (and adults) think abstractly. They solve geometric problems about circles and squares without reference to what the circles and squares may represent in the real world. Adolescents in this stage derive rules for behavior from general principles and can focus, or center, on multiple aspects of a situation at once to solve problems.

In this stage, adolescents tend to emerge as theoretical scientists—even though they may think of themselves as having little interest in science. That is, they can deal with hypothetical situations. They realize that situations can have different outcomes, and they think ahead, imagining those outcomes. Adolescents also conduct social experiments to test their hypotheses. They may try out various tones of voice and ways of treating others to see what works best for them.

**Adolescent Egocentrism**

Adolescents in the formal operational stage reason deductively. They classify objects or people and then draw conclusions about them. Adolescents can be proud of their new logical abilities, leading to a new sort of egocentrism: They demand acceptance of their logic without recognizing the exceptions or practical problems that may be considered by adults. Consider this example: “It is wrong to hurt people. Company A hurts people” (perhaps through pollution or economic pressures). “Therefore, Company A must be severely punished or shut down.” This thinking is logical. But by impatiently demanding major changes or severe penalties, one may not fully consider various practical problems such as the thousands of workers who might be laid off. Adults have often had life experiences that encourage them to see shades of gray rather than black and white.
The thought of preschoolers is characterized by egocentrism in which they cannot take another's point of view. Adolescent thought is marked by an egocentrism in which they can understand the thoughts of others but still have trouble separating things that are of concern to others and those that are of concern only to themselves (Elkind, 1967, 1985). Adolescent egocentrism gives rise to two interesting cognitive developments: the imaginary audience and the personal fable.

The concept of the imaginary audience refers to the belief that other people are as concerned with our thoughts and behavior as we are. Adolescents thus see themselves as the center of attention and assume that other people are also preoccupied with their appearance and behavior (Milstead et al., 1993). Adolescents may feel onstage with all eyes on them. The concept of the imaginary audience may drive the intense adolescent desire for privacy. It helps explain why adolescents are so self-conscious, why they worry about every facial blemish and spend hours grooming. Self-consciousness seems to peak at about thirteen and then decline. Girls tend to be more self-conscious than boys (Elkind & Bowen, 1979).

The personal fable is the belief that our feelings and ideas are special, even unique, and that we are invulnerable. The personal fable seems to underlie adolescent showing off and risk taking (Cohn et al., 1995).

The Postconventional Level of Moral Reasoning

Kohlberg's theory of moral reasoning involves three levels: preconventional, conventional, and postconventional. Individuals can arrive at the same decision as to whether or not Heinz should save his wife by taking the drug without paying for it for different reasons. Deciding not to steal the drug for fear of punishment is less complex than deciding not to because of the belief that doing so will weaken the social order.

None of Kohlberg's levels is tied to a person's age. Although postconventional reasoning is the highest level, most adolescents and adults never reach it. But if postconventional reasoning emerges, it usually does so in adolescence. Kohlberg's (1969) research found postconventional moral judgments were absent among seven- to ten-year-olds. But by age sixteen, stage 5 reasoning is shown by about 20% of adolescents, and stage 6 reasoning by about 5%.

At the postconventional level, moral reasoning is based on the person's own moral standards. Moral judgments are derived from personal values, not from conventional standards or authority figures. In the contractual, legalistic orientation characteristic of stage 5, it is recognized that laws stem from agreed-upon procedures and that the rule of law is in general good for society; therefore, laws should not be violated except under pressing circumstances. (Although it is illegal for Heinz to steal the drug, in this case it is the right thing to do.)

Stage 6 moral reasoning demands adherence to supposedly universal ethical principles such as the sanctity of human life, individual dignity, justice, and the Golden Rule ("Do unto others as you would have them do unto you"). If a law is unjust or contradicts the rights of the individual, it is wrong to obey it.

People at the postconventional level see their conscience as the highest moral authority. This point has created confusion. To some it suggests that it is right to break the law when it is convenient, but this interpretation is wrong. Kohlberg means that people at this level feel they must do what they think is right even if they break the law or must sacrifice themselves.

Are There Gender Differences in Moral Development?

A number of studies using Heinz's dilemma have found that boys show higher levels of moral reasoning than girls. But Carol Gilligan (1982; Gilligan et al., 1989) argues that this gender difference reflects different patterns of socialization for boys and girls—not differences in morality. Gilligan considers eleven-year-old Jake. Jake weighs the scales of justice like a math problem. He shows that life is worth more than property and concludes that it is Heinz's duty to steal the drug (stage 4 reasoning). Gilligan also points to eleven-year-old Amy. Amy vacillates. Amy says that stealing...
Social and Emotional Development

What social and emotional developments occur during adolescence? In terms of social and emotional development, adolescence has been associated with turbulence. In the 19th century, psychologist G. Stanley Hall described adolescence as a time of Sturm und Drang—storm and stress. Current views challenge the assumption that “storm and stress” is the norm (Griffin, 2001). Many adolescents experience a rather calm and joyous period of development. We need to consider individual differences and cultural variations (Arnett, 1999).

Certainly, many American teenagers abuse drugs, get pregnant, contract sexually transmitted infections, get involved in violence, fail in school, even attempt suicide (CDC, 2000b). The U.S. Centers for Disease Control and Prevention (CDC, 2000b) reported that 72% of all deaths among people aged ten to twenty-four years result from just four causes: motor vehicle crashes (31%), other accidents (11%), homicide (18%), and suicide (12%). Nevertheless, the majority of Americans make it through adolescence quite well.

Striving for Independence

As these biological changes take place, adolescents strive to become more independent from parents, which may lead to bickering (Smetana et al., 2003). Bickering usually concerns homework, chores, money, appearance, curfews, and dating. Disagreements about clothes and friends are common.

Adolescents and parents are often in conflict because adolescents experiment with things that can be harmful to their health. Yet—apparently because of the personal fable—adolescents may not perceive such activities to be as risky as their parents do. Cohn and his colleagues (1995) found, for example, that parents perceived drinking, smoking, failure to use seat belts, drag racing, and a number of other activities to be riskier than did their teenagers.

Some distancing from parents is beneficial (Smetana et al., 2003). After all, adolescents do have to form relationships outside the family. But greater independence does not necessarily mean that adolescents become emotionally detached from parents or fall completely under the spell of peers. Most adolescents continue to feel love, respect, and loyalty toward parents (Eberly & Montemayor, 1999). Adolescents who feel close to their parents actually show more self-reliance and independence than do those who distance themselves. They fare better in school and have fewer adjustment problems (Flouri & Buchanan, 2003). Despite conflict over issues of control, parents and adolescents tend to share social, political, religious, and economic views (Sagrestano et al., 1999). In sum, there are frequent differences between parents and adolescents on issues of personal control. However, there is apparently less of a “generation gap” on broader matters.

Ego Identity Versus Role Diffusion

According to Erik Erikson, we undergo eight stages of psychosocial development. Four of them, beginning with trust versus mistrust, occur in childhood. The fifth, that of ego identity versus role diffusion, occurs in adolescence. Ego identity is a firm sense of who one is and what one stands for. It can carry one through difficult times and lend meaning to achievements. Adolescents who do not develop ego identity may experience role diffusion. They spread themselves too thin, running down one blind alley after another and placing themselves at the mercy of leaders who promise to give them the sense of identity they cannot find for themselves.

The creation of an adult identity is a key challenge, involving learning about one’s interests and abilities and connecting them with occupations and roles in life. Identity also involves sexual, political, and religious beliefs and commitments. Will the
individual be monogamous or sexually active with several people? Will he or she lean left or right along the political spectrum? What role will be played by religion?

Adolescent Sexuality

The changes of puberty make the adolescent body ready for sexual activity. High hormone levels stir interest in sex. In today’s world, many adolescents wrestle with issues of how and when to express their awakening sexuality. To complicate matters, Western culture sends mixed messages about sex. Teenagers may be advised to wait until they have married or entered into meaningful relationships, but they are also bombarded by sexual messages in films, TV, print advertising, and virtually every other medium.

About half of American high school students have engaged in sexual intercourse (CDC, 2000b). Adolescents usually obtain little advice at home or in school about how to handle their emerging sexuality. Peers also influence the sexual behavior of adolescents. When teenagers are asked why they do not wait to have sexual intercourse, the most common reason is peer pressure (Dickson et al., 1998). All in all, about 800,000 teenage girls get pregnant each year, resulting in 500,000 births (“Less Sex,” 2004).

Still, there is encouraging news. Recent research shows a decline in the teenage pregnancy rate due largely to educational campaigns in the schools, the media, churches, and communities (“Less Sex,” 2004).

LO 4 Adulthood

Development continues throughout the life span. Many theorists believe that adult concerns and involvements follow observable patterns, so that we can speak of “stages” of adult development. Others argue that there may no longer be a standard life cycle with predictable stages or phases. Age now has an “elastic quality”—being fifty, sixty, seventy, eighty, or even ninety no longer necessarily means loss of cognitive or physical ability, or even wrinkling. People are living longer than ever before and are freer than ever to choose their own destiny.

Physical Development

The most obvious aspects of development during adulthood are physical. What physical developments occur during adulthood? Let us consider the physical developments that take place in young, or early, adulthood, which covers the ages between twenty and forty; the transition to middle adulthood, years forty to forty-five; middle adulthood, which spans the ages of forty-five to sixty-five; and late adulthood, which begins at sixty-five.

Young Adulthood

Most young adults are at their height of sensory sharpness, strength, reaction time, and cardiovascular fitness. On the other hand, women gymnasts find themselves lacking a competitive edge in their twenties because they are accumulating (normal) body fat and losing suppleness and flexibility. Other athletes, such as football, baseball, and basketball players, are more likely to experience a decline in their thirties. Most athletes retire by age forty. Sexually speaking, most people in early adulthood become readily aroused. They tend to attain and maintain erections as desired and to lubricate readily.

Middle Adulthood

In our middle years, we are unlikely to possess the strength, coordination, and stamina that we had during our twenties and thirties. The decline is most obvious in professional sports, where peak performance is at a premium.

The years between forty and sixty are reasonably stable. There is gradual physical decline, but it is minor and only likely to be of concern if a person competes with young adults—or with idealized memories of oneself. There are exceptions. The twenty-year-old couch potato occasionally becomes the fifty-year-old marathoner. By any reasonable standard, people in middle adulthood can maintain excellent cardiopulmonary condition. Because the physical decline in middle adulthood is gradual, people who begin to exercise and eat more nutritious diets (e.g., decrease intake of animal fats and increase intake of fruits and vegetables) may find themselves looking and feeling better than they did in young adulthood.

For women, menopause is usually considered to be the single most important change of life that occurs during middle adulthood. Menopause usually occurs during the late forties or early fifties. Menopause is the final phase of the climacteric, which is caused by a decline in secretion of female sex hormones. Ovulation comes to an end, and there is some loss of breast tissue and of elasticity of the skin. Loss of bone density can lead to osteoporosis (brittle bones). During the climacteric, many women experience hot flashes, loss of sleep, and some anxiety and depression. Women’s experiences during and following the climacteric reflect the intensity of their physical symptoms—which vary considerably—and the extent to which their self-concept was wrapped up with their reproductive capacity (Dennerstein, 2003; Hvas et al., 2004).
Late Adulthood

An agequake is coming. With improved health care and knowledge of the importance of diet and exercise, more Americans than ever before are sixty-five or older (Nuland, 2005). In 1900, only one American in thirty was over sixty-five. By 2030, one American in five will be sixty-five or older.

Figure 3.7

The Relentless March of Time

Go to 4ltrpress.cengage.com/psych to access an interactive version of this figure.

Various changes—some of them troublesome—do occur during the later years (see Figure 3.7). Changes in calcium metabolism increase the brittleness of the bones and heighten the risk of breaks due to falls. The skin becomes less elastic and subject to wrinkles and folds. Older people see and hear less acutely. Because of a decline in the sense of smell, they may use more spice to flavor their food. Older people need more time to respond to stimuli. Older drivers, for example, need more time to respond to changing road conditions. As we grow older, our immune system functions less effectively, leaving us more vulnerable to disease. Age-related changes impact sexual functioning, yet most people can enjoy sex for a lifetime if they remain generally healthy and adjust their expectations.

Cognitive Development

What cognitive developments occur during adulthood? As in the case of physical development, people are also at the height of their cognitive powers during early adulthood. Cognitive development in adulthood has many aspects—creativity, memory functioning, and intelligence. People can be creative for a lifetime. At the age of eighty, Merce Cunningham choreographed a dance that made use of computer-generated digital images (Teachout, 2000). Hans Hofmann created some of his most vibrant paintings at eighty-five, and Pablo Picasso was painting in his nineties. Grandma Moses did not even begin painting until she was seventy-eight years old. Giuseppe Verdi wrote his joyous opera Falstaff at the age of seventy-nine.

Memory functioning does decline with age. But declines in memory are not usually as large as people assume and are often reversible (Villa & Abeles, 2000). Memory tests usually measure ability to recall meaningless information. Older people show better memory functioning in areas in which they can apply their experience, especially their specialties, to new challenges. For example, who would do a better job of learning and remembering how to solve problems in chemistry—a college history major or a retired professor of chemistry?

You might choose the chemistry professor because of his or her crystallized intelligence, not his or her fluid intelligence.
Fluid intelligence is demonstrated by the ability to process information rapidly, as in learning and solving problems in new areas. It is the sort of intellectual functioning that is typically measured on intelligence tests, especially with problems that have time limits.

Young adults obtain the highest intelligence test scores (Schaie et al., 2004). Yet people tend to retain verbal skills, as demonstrated by vocabulary and general knowledge, into advanced old age. The performance of older people on tasks that require speed and visual–spatial skills, such as piecing puzzles together, tends to decline (Schaie et al., 2004; Zimprich & Martin, 2002).

One of the most severe assaults on intellectual functioning, especially among older people, is Alzheimer's disease, a progressive form of mental deterioration that affects about 1% of people at age sixty and nearly half of people past age eighty-five (Brody, 2005). Although Alzheimer's is connected with aging, it is a disease rather than a normal progression (Yesavage et al., 2002).

Social and Emotional Development

Changes in social and emotional development during adulthood are probably the most "elastic" or fluid. These changes are affected by cultural expectations and individual behavior patterns. As a result, there is much variety. Nevertheless, many developmental theorists suggest that there are enough commonalities that we can speak of trends. One trend is that the outlook for older people has become more optimistic over the past generation—not only because of medical advances but also because the behavior and mental processes of many older people are remaining younger than at any other time in history.

There is more good news. Research evidence suggests that people tend to grow psychologically healthier as they advance from adolescence through middle adulthood. Psychologists Constance Jones and William Meredith (2000) studied information on 236 participants in California growth studies who had been followed from early adolescence for about fifty years and found that they generally became more productive and had healthier relationships as time went on. Even some people with a turbulent adolescence showed better psychological health at age sixty-two than they had half a century earlier.

Young Adulthood

What social and emotional developments occur during young adulthood? Many theorists suggest that young adulthood is the period of life during which people tend to establish themselves as independent members of society.

At some point during their twenties, many people become fueled by ambition. Many strive to advance in their careers. Those who seek professional careers may spend much of their twenties acquiring the skills that will enable them to succeed (Levinson et al., 1978; Levinson, 1996). It is largely during the twenties that people become generally responsible for their own support, make their own choices, and are freed from parental influences. Many young adults adopt what theorist Daniel Levinson and his colleagues (1978) call the The Dream—the drive to "become" someone, to leave their mark on history—which serves as a tentative blueprint for life.

During young adulthood, people tend to leave their families of origin and create families of their own. Erik
Erikson (1963) characterized young adulthood as the stage of intimacy versus isolation. Erikson saw the establishment of intimate relationships as central to young adulthood. Young adults who have evolved a firm sense of identity during adolescence are ready to “fuse” their identities with those of other people through marriage and abiding friendships. People who do not reach out to develop intimate relationships risk retreating into isolation and loneliness.

At age thirty or so, many people reassess their lives, asking themselves, “Where is my life going?” “Why am I doing this?” (Levinson et al., 1978). It is not uncommon for them to switch careers or form new intimate relationships. The later thirties are often characterized by settling down—planting roots. They become focused on career advancement, children, and long-term mortgages.

**Middle Adulthood**

A number of key changes in social and emotional development occur during middle adulthood. What social and emotional developments occur during middle adulthood? Consider Erikson’s views on the middle years.

Erikson (1963) labeled the life crisis of the middle years generativity versus stagnation. Generativity involves doing things that we believe are worthwhile, such as rearing children or producing on the job. Generativity enhances and maintains self-esteem. Generativity also involves making the world a better place through joining church or civic groups. Stagnation means treading water, as in keeping the same job at the same pay for thirty years. Stagnation damages self-esteem.

According to Levinson and colleagues (1978), whose research involved case studies of forty men, there is a midlife transition at about age forty to forty-five. Previously, men had viewed their age in terms of the number of years that had elapsed since birth. Now they begin to think of their age in terms of the number of years they have left.

Research suggests that women may undergo a midlife transition sooner than men do (Zucker et al., 2002). Why? Much of it has to do with the winding down of the “biological clock”—that is, the abilities to conceive and bear children. For example, once they turn thirty-five women are usually advised to have their fetuses routinely tested for Down syndrome and other chromosomal disorders.

In both sexes, according to Levinson, the midlife transition may trigger a midlife crisis. The middle-level, middle-aged businessperson looking ahead to another ten to twenty years of grinding out accounts in a Wall Street cubbyhole may encounter severe depression. The homemaker with two teenagers, an empty house from 8:00 AM to 4:00 PM, and a fortieth birthday on the way may feel that she or he is coming apart at the seams. Both feel a sense of entrapment and loss of purpose.

Yet many Americans find that these years present opportunities for new direction and fulfillment. Many people are at the height of their productive powers during this period. Many, perhaps most, of today’s robust forty-five- to fifty-five-year-olds can look forward to another thirty to forty healthy years.

**Late Adulthood**

What social and emotional developments occur during late adulthood? Generativity does not end with middle age. Research suggests that many individuals in late adulthood continue to be creative and also to maintain a firm sense of who they are and what they stand for (Webster, 2003). The Greek philosopher Plato was so optimistic about late adulthood that he argued that one could achieve great pleasure in one’s later years, engage in meaningful public service, and also achieve wisdom (McKee & Barber, 2001).

According to psychologist Erik Erikson, late adulthood is the stage of ego integrity versus despair. The basic challenge is to maintain the belief that life is meaningful and worthwhile as one ages and faces the inevitability of death. Erikson, like Plato, spoke of the importance of wisdom. He believed that ego integrity derives from wisdom, which can be defined as expert knowledge about the meaning of life, balancing one’s own needs and those of others, and pushing toward excellence in one’s behavior and achievements (Baltes & Staudinger, 2000; Sternberg, 2000). Erikson also believed that wisdom enables people to accept their life span as occurring at a certain point in the sweep of history and as being limited. We spend most of our lives accumulating objects and relationships, and Erikson argues that adjustment in the later years requires the ability to let go of them. Other views of late adulthood stress the importance of creating new challenges; however, biological and social realities may require older people to become more selective in their pursuits.