5 Toddlerhood

Section 1 PHYSICAL DEVELOPMENT

Growth and Change in Years 2 and 3

Bodily Growth
Brain Development
Sleep and (More) Teething
Motor Development

Socializing Physical Functions: Toilet Training and Weaning

Toilet Training
Weaning

Section 2 COGNITIVE DEVELOPMENT

Cognitive Development Theories

Cognitive Development in Toddlerhood: Piaget's Theory
Vygotsky's Cultural Theory of Cognitive Development

Language Development

The Biological and Evolutionary Bases of Language
Milestones of Toddler Language: From First Words to Fluency
Learning Language in a Social and Cultural Context

Section 3 EMOTIONAL AND SOCIAL DEVELOPMENT

Emotional Development in Toddlerhood

Toddlers' Emotions
The Birth of the Self
Gender Identity and the Biology of Gender Development

One Special Person: Attachment Theory and Research

Attachment Theory
Quality of Attachment
Critiques of Attachment Theory

The Social World of the Toddler

The Role of Fathers
The Wider Social World: Siblings, Peers, and Friends
Autism: A Disruption in Social Development
Media Use in Toddlerhood

Summing Up

Sometimes on a pleasant day I walk to a nearby park to have my lunch, and one day recently as I was sitting at a picnic table eating my chili dog and potato chips, I observed two moms and their young children at the adjacent table. Each mom had an infant about 6 months old in a stroller, and the infants lay in their strollers peacefully, each of them examining a soft colorful toy the mom had given them. One mom also had a boy who appeared to be perhaps 3 or 4 years old. The boy wandered back and forth between the moms and the playground, climbing on the ladders and sliding down slides, returning to the picnic table occasionally for food or just to check in.

The other mom had a girl who appeared to be perhaps 2 years old, and it was this toddler who drew the most attention. Unlike the infants, who were not going anywhere without their moms' knowledge and consent, the toddler was moving around constantly, climbing on the picnic table, peering into the stroller at her little sister, chasing a squirrel, curiously picking up items off the ground. Unlike the older boy, the toddler could not be allowed to go off on her own because she had less of a sense of what was safe and what to avoid. At one point she climbed on the picnic table and stood precariously on one of the seats, then slipped and hurt her leg, crying until her mother came and soothed her. She did not speak much herself, unlike the older boy, but she was the subject of many statements from her mother and she seemed to understand whatever she was told: "Would you like some juice?" "Look at the squirrel!" "Don't pick that up, it's yucky." When the moms and their children finally left the park, the boy helped his mother push the stroller, while the other mom carried her toddler daughter on her hip as she pushed her other daughter along.

Development during toddlerhood, the second and third years of life, rivals development during infancy for events of drama and importance. On their first birthday most infants are barely able to walk without support; by their third birthday toddlers can run, jump, and climb stairs. On their first birthday infants speak only a handful of words; by their third birthday toddlers have achieved remarkable fluency in the language of their culture and are able to understand and speak about nearly any topic under the sun. On their first birthday infants have little in the way of emotional regulation, and show their anger and their exuberance with equal unrestraint; by their third birthday, toddlers have begun to grasp well the moral worldview of their culture, and they exhibit the sociomoral emotions of guilt, embarrassment, and shame. On their first birthday the social world of most infants is limited to parents, siblings, and perhaps some extended family members; but by their third birthday toddlers' social world has greatly expanded. Anthropologist Margaret Mead (1930/2001) described the change from infancy to toddlerhood as going from being a "lap child," in almost constant physical contact with the mother, to being a "knee child" who is attached to the mother but also spends a lot of time in a wider social circle—especially with siblings and older children as part of a mixed-age play group.

"By their third birthday, toddlers' social world has greatly expanded."

In this chapter we examine all of these changes in detail, beginning with the physical changes of toddlerhood, including physical growth, motor development, and the socialization of physical functions through toilet training and weaning. Then we focus on theories of cognitive development and look at language development, from the evolutionary basis of language to the burst of language use that begins at about 18 months of age, to the social and cultural context of language development. Finally, we look at socioemotional development in toddlerhood, including the development of the sociomoral emotions and emotional regulation, the birth of the self, gender development, attachments to mothers and others, and the toddler's widening social world.

SECTION 1 PHYSICAL DEVELOPMENT

LEARNING OBJECTIVES

- **5.1** Describe the typical changes in physical growth that take place in toddlerhood and explain the harmful effects of nutritional deficiencies on growth.
- **5.2** Describe the changes in brain development that take place during toddlerhood, and identify the two most common methods of measuring brain activity.
- **5.3** Describe the changes in sleeping patterns and sleeping arrangements that take place during toddlerhood.
- **5.4** Describe the advances in motor development that take place during toddlerhood.
- **5.5** Compare and contrast the process and timing of toilet training in developed countries and traditional cultures.
- **5.6** Distinguish the weaning process early in infancy from weaning later in toddlerhood.

Growth and Change in Years 2 and 3

During the second and third years of life, physical growth slows down from its blazing pace of the first year, but it remains more rapid than it will be at any later time of life. This is true for bodily growth as well as for brain development. Sleep patterns change substantially, too, in years 2 and 3. Toddlerhood is also a time of dramatic advances in both gross and fine motor development.

Bodily Growth

LEARNING OBJECTIVE 5.1

Describe the typical changes in physical growth that take place in toddlerhood and explain the harmful effects of nutritional deficiencies on growth.

The growth of the body is swift and steady during the toddler years. **Figure 5.1** on page 178 shows the changes in height and weight for American girls. Patterns of growth are similar in other developed countries (UNICEF, 2009). Throughout childhood the average boy is slightly taller and heavier than the average girl.

During toddlerhood, children lose the "baby fat" of infancy and become leaner as they become longer (Fomon & Nelson, 2002). They no longer need as much fat to keep their bodies at a constant temperature. Also, the head, which was one-fourth of the neonate's length, is one-fifth of the 2-year-old's height. The rest of the body will continue to grow faster than the head, and by adulthood the head will be one-eighth the size of the whole body.

Toddlers in developing countries often do not grow as rapidly as toddlers in developed countries. Typically, at birth and for the first 6 months of life, rates of growth are similar in developed countries and developing countries (Levine et al., 1994), because during the early months infants in most cultures rely mainly on breast milk or infant formula and eat little solid food. However, starting around 6 months of age, when they begin eating solid food as a larger part of their diet, children in developing countries receive less protein and begin to lag in their growth. According to the World Health Organization (WHO, 2010), about one-fourth of children worldwide have diets that are deficient in protein, nearly all of them in developing countries. By the time they reach

Toddlers lose a lot of their "baby fat" and often become leaner as they grow longer. This is my daughter Paris at 4 months and 18 months.

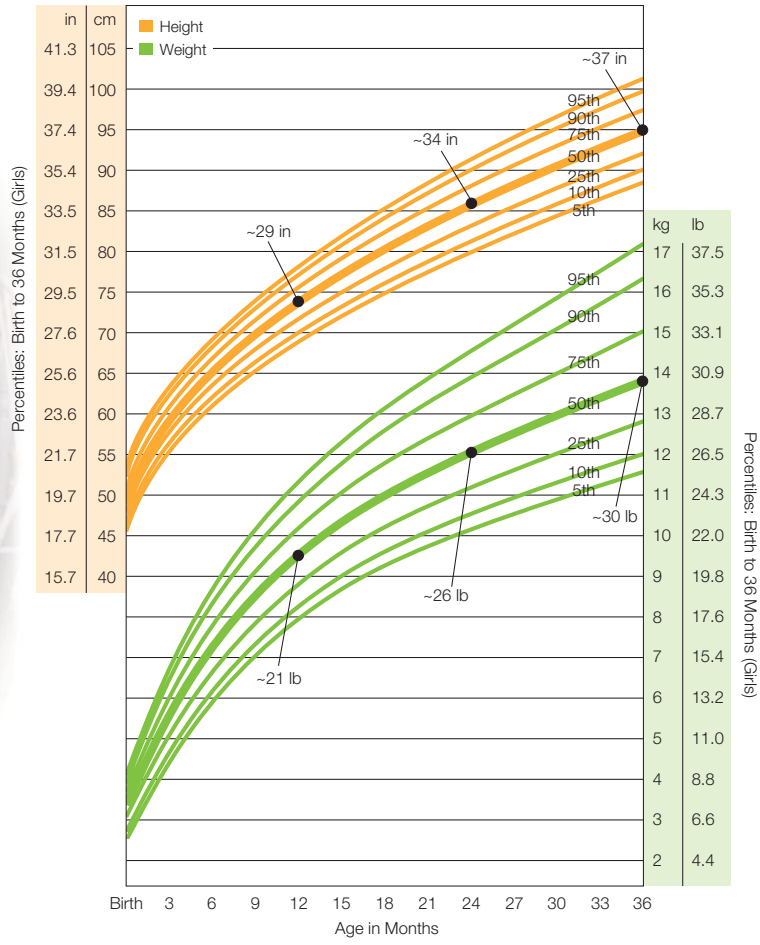


Figure 5.1 • **Growth Chart for American Girls From Birth Through Age 3**
Growth slows from infancy to toddlerhood but remains rapid.
Source: Based on National Center for Health Statistics

kwashiorkor protein deficiency in childhood, leading to symptoms such as lethargy, irritability, thinning hair, and swollen body, which may be fatal if not treated

micronutrients dietary ingredients essential to optimal physical growth, including iodine, iron, zinc, and vitamins A, B_{12}, C, and D

Toddlers who do not receive enough protein in their diets sometimes suffer from kwashiorkor, as in this boy in Uganda.

their first birthday, the height and weight of average children in developing countries are comparable to the bottom 5% of children in developed countries, and this pattern continues through childhood into adulthood.

Protein deficiency not only limits the growth of children in developing countries but it makes them vulnerable to disease and early death. One outcome specific to toddlerhood is **kwashiorkor**, in which protein deficiency leads to a range of symptoms such as lethargy, irritability, and thinning hair (Medline, 2008). Often the body swells with water, especially the belly. Toddlers with kwashiorkor may be getting enough food in the form of starches such as rice, bread, or potatoes, but not enough protein. Kwashiorkor lowers the effectiveness of the immune system, making toddlers more vulnerable to disease, and over time can lead to coma followed by death. Improved protein intake can relieve the symptoms of kwashiorkor, but earlier damage to physical and cognitive development is likely to be permanent.

In addition to protein, toddlers need a diet that contains **micronutrients** such as iron, zinc, and vitamins A, B_{12}, C, and D. Perhaps the most crucial micronutrient deficiency worldwide is iodine. About one-third of the world's population has a dietary deficiency of iodine, especially in Africa and South Asia (Zimmermann et al., 2008). In young children a lack of iodine inhibits cognitive development, resulting in an estimated IQ (intelligence quotient) deficiency of 10 to 15 points, a substantial margin. Fortunately, adding iodine to a diet is simple—through iodized salt—and cheap, costing only a few cents per person per year. Unfortunately, one-third of the world's children still lack this simple micronutrient. Some children in developed countries also lack sufficient micronutrients. One national study of toddlers in the United States found that iron deficiency prevalence rates were about 7% overall and were twice as high among Latino toddlers (12%) as among White or African American toddlers (both 6%; Brotanek et al., 2007). Iron deficiency makes toddlers tired and irritable.

Brain Development

LEARNING OBJECTIVE 5.2

Describe the changes in brain development that take place during toddlerhood, and identify the two most common methods of measuring brain activity.

The brain continues its rapid growth during the toddler years. As noted in Chapter 4, it is not the production of new brain cells that marks early brain development. In fact, the brain has only about one-half as many neurons at age 2 as it did at birth. What most distinguishes early brain development is the steep increase in **synaptic density**, the number of synaptic connections among neurons (Huttenlocher, 2003). These connections multiply immensely in the first 3 years, and toddlerhood is when peak production of new synapses is reached in the frontal lobes, the part of our brain that is the location of many of our most distinctively human cognitive qualities, such as reasoning, planning, and creativity. During toddlerhood new synapses in the frontal cortex are produced at the mind-boggling rate of 2 million per second, reaching a total by age 2 of more than 100 trillion (see **Figure 5.2**; Johnson, 2001; Shonkoff & Phillips, 2000). The peak of synaptic density comes right at the end of toddlerhood, around the third birthday (Thompson & Nelson, 2001).

After the peak of synaptic density, a long process of synaptic pruning begins. In synaptic pruning, the connections between neurons become fewer but more efficient, with the synapses that are used becoming more developed, while unused synapses wither away (see Chapter 4). Synaptic pruning will remove about one-third of synapses in the frontal cortex from early childhood to adolescence, and after a new burst of synaptic density in early adolescence the process of synaptic pruning will continue at a slower rate through adolescence and into adulthood (Blakemore, 2008; Thompson, 2001).

Methods of assessing brain activity provide evidence of the rapid growth of the toddler brain. One widely used method, the **EEG (electroencephalogram)**, measures the electrical activity of the cerebral cortex. Every time a synapse fires it emits a tiny burst of electricity, which allows researchers to measure the overall activity of the cerebral cortex as well as activation of specific parts of it. EEG research on toddlers has found a sharp increase in overall cortical activity from 18 to 24 months (Bell & Wolfe, 2008), reflecting important advances in cognitive and language development that we will examine later in this chapter. Another common method, **fMRI (functional magnetic resonance imaging)**, requires a person to lie still inside a machine that uses a magnetic field to record changes in blood flow and oxygen use in the brain in response to different kinds of stimulation, such as music (see **Figure 5.3** on page 180). Unlike the EEG, an fMRI can detect activity in any

synaptic density density of synapses among neurons in the brain; peaks around age 3

EEG (electroencephalogram) device that measures the electrical activity of the cerebral cortex, allowing researchers to measure overall activity of the cerebral cortex as well as activation of specific parts of it

fMRI (functional magnetic resonance imaging) method of monitoring brain activity in which a person lies inside a machine that uses a magnetic field to record changes in blood flow and oxygen use in the brain in response to different kinds of stimulation

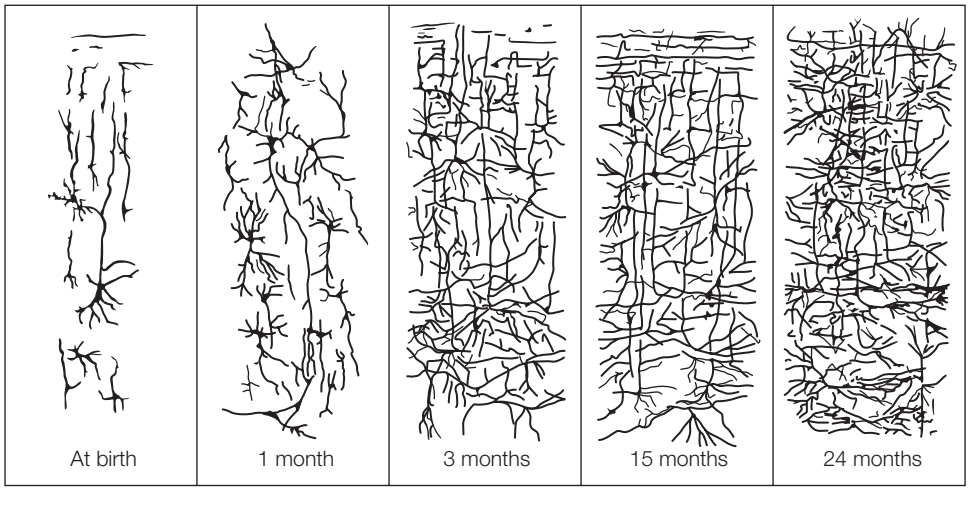


Figure 5.2 • **Changes in Synaptic Density From Birth to Age 2** Synaptic connections increase throughout the first 2 years, with the greatest density occurring at the end of toddlerhood.
Source: Conel, 1930/1963

Figure 5.3 • **fMRI Machine** It is not until after toddlerhood that most children can lie still long enough to have an fMRI.

part of the brain, not just the cerebral cortex. The fMRI method is not often used with toddlers, perhaps because they are too wiggly and incapable of restraining their movements. However, one study solved this problem by assessing toddlers (age 21 months) and 3-year-olds as they slept, and found that toddlers showed greater frontal lobe activity in response to speech than the older children did, reflecting the brain's readiness for rapid language acquisition during the toddler period (Redcay et al., 2008).

Sleep and (More) Teething

5.3 LEARNING OBJECTIVE

Describe the changes in sleeping patterns and sleeping arrangements that take place during toddlerhood.

Sleep declines from 16 to 18 hours a day in the neonate to about 15 hours a day by the first birthday, and further to about 12 to 13 hours by the second birthday. The toddler not only sleeps less than the infant but also has more of a night-sleeping, day-waking arousal schedule. This comes as a great relief to their parents! Most toddlers take only one nap during the day by the time they reach 18 months old, compared to the two or more naps a day typical of infants (Iglowstein et al., 2003).

However, this does not mean that toddlers consistently sleep through the night. In fact, one study of toddlers in Israel, England, and Australia found that episodes of waking in the night increased in frequency from 1½ to 2 years of age (Scher et al., 2004). There are two reasons why waking at night often increases during this time. First, there is a resurgence of teething between 13 and 19 months of age (Bong et al., 2008). This time it is the molars—the large teeth in the back of the mouth—which are bigger and more painful as they emerge than were the teeth that emerged in infancy. Second, toddlers develop a more definite sense of themselves and others as they approach age 2, and if they sleep in a bed separate from their parents they become more aware of this separation and more intentional about relieving it by summoning a parent or going into the parents' room.

What about the toddlers in traditional cultures, who have been sleeping alongside their mothers through infancy? This sleeping arrangement continues through the beginning of toddlerhood, but it will not last forever. When mothers become pregnant with another child, usually when the toddler reaches 2 or perhaps 3 years old, the toddler is ousted from that cozy spot beside her at night to make room for the new baby. However, this does not mean that toddlers now sleep alone. Instead, they now sleep alongside older siblings, or perhaps the father (Owens, 2004). Throughout life, sleeping alone is rare in traditional cultures.

APPLYING YOUR KNOWLEDGE . . . *as a Nurse*

One of your patients is an American grandmother who is very critical of her Japanese daughter-in-law, who co-sleeps with her two-year-old granddaughter. The grandmother asserts that this is unhealthy for the granddaughter. How do you respond?

Motor Development

Describe the advances in motor development that take place during toddlerhood

LEARNING OBJECTIVE 5.4

Toddlerhood is a time of dramatic advances in motor development. There are few physical advances more life changing than going from barely standing to walking, running, climbing, and jumping—and all this progress in gross motor development takes place during the toddler years. With regard to fine motor development, toddlers go from being able to place a small object inside a large object to holding a cup and building a tower of blocks.

GROSS MOTOR DEVELOPMENT: FROM TODDLING TO RUNNING, JUMPING, AND CLIMBING Next time you see a child about a year old trying to walk, observe closely. When children first begin to walk they spread their feet apart and take small, stiff-legged steps, shifting their weight from one leg to the other. In short, they toddle! This is, in fact, where the word *toddler* comes from, in reference to their tentative, unsteady, wide-stance steps.

On average, children begin to walk without support at about 11 months old, just as they are about to enter toddlerhood; but there is a wide range of normal variation around this average, from about 9 to 17 months (Adolph & Berger, 2006; Bayley, 2005). Children who walk at 9 months are no more likely than children who walk at 17 months to become Olympic athletes some day, they simply have different biological time lines for learning to walk.

By 15 months most toddlers can stand (briefly) on one leg and have begun to climb, although once they have climbed onto something, they are much less skilled at climbing down. For example, most can climb up stairs at this age but not (safely) down. By 18 months most can run, although at first they run with the same stiff-legged, wide-stance posture as they use for walking. By 24 months they can kick a ball or throw a small object, and their running has become more flexible and fluid. At this age they can now go down the stairs that they earlier learned to climb up, and more: They can squat for minutes at a time, stand on tiptoes, and jump up and down. Small wonder toddlers move around so much, with so many new abilities to try out!

Through the third year, toddlers' gross motor skills continue to develop as they gain more flexibility and balance. They become better at using visual information to adjust their walking and running in response to changes in surfaces, so they become less likely to stumble and fall (Berger et al., 2005). **Table 5.1** on page 182 summarizes the major milestones in gross motor development during toddlerhood.

The research just described is based on Western, mostly American toddlers. What about toddlers in traditional cultures? As you will recall from Chapter 4, infants in traditional cultures are held or carried most of the time to keep them safe and secure. Toddlers in traditional cultures are allowed slightly more mobility—it is much harder to keep a toddler still than it is an infant—but they continue to be held and carried for about half their waking hours (Levine, 1977; Levine et al., 1994). Nevertheless, they are equal to toddlers in developed countries in the development of their gross motor skills (Greenfield, 2003). In fact, toddlers in Africa (as well as African Americans) tend to reach gross motor milestones earlier than toddlers of European backgrounds (Kelly et al., 2006).

At 12–18 months many toddlers can barely walk, but by their third year they can run and jump.

TABLE 5.1 Milestones of Gross Motor Development in Toddlerhood

Age (*Months*)	Milestone
9–16	Stand alone
9–17	Walk without support
11–19	Stand on one leg
11–21	Climb onto chairs, beds, up stairs, etc.
13–17	Walk backward
14–22	Run
17–30	Jump in place
16–30	Walk on tiptoes
22–36	Walk up and down stairs

Source: Based on Adolph & Berger (2006); Bayley (2005); Coovadia & Wittenberg (2004); Frankenburg et al. (1992); Murkoff et al. (2006).

Note: The range shown is the age period at which 90% of toddlers achieve the milestone.

The reason for restricting toddlers' movements is the same as for infants: to keep them safe and away from harm. Fire is especially a danger, as many traditional cultures have a cooking fire burning perpetually—during the day for cooking meals, during the night for warmth. Because toddlers are so active and so heedless of potential dangers, and because they trip and tumble a lot as they develop their walking and running skills, there is a danger that they will fall into a cooking fire unless their movements are restricted. For toddlers in traditional cultures, other common potential dangers are falling off a cliff, falling into a lake or river, or being trampled by livestock. Holding and carrying toddlers for much of their waking hours makes mishaps less likely.

THINKING CULTURALLY

In your culture, what are some potential dangers to toddlers (other than those named here) and how do adults protect against these dangers?

For the same safety reasons, parents in developed countries "baby proof" their homes once their children become mobile, removing sharp objects and other potential sources of harm (McKenzie, 2004). Parents of toddlers should also place gates at the top of stairs to prevent the child from falling, add locks to cabinets containing sharp objects and household chemicals, install outlet covers to prevent electrocution, and take other measures to protect against potential sources of harm or injury (Eisenberg et al., 2008).

FINE MOTOR DEVELOPMENT: FROM SCRIBBLING TO BUILDING WITH BLOCKS Toddler gains in fine motor development are not as revolutionary as their gains in gross motor development, but they are certainly substantial. Already at 12 months they have come a long way in the course of infancy, and can hold an object in one hand while performing an action on it with the other; for example, they can hold a container with the right hand while placing rocks into it with the left hand (Kopp, 2003). At 12 months most have come to show a definite right- or left-hand preference for self-feeding, and over the next 6 months they try a variety of grips on their spoons until they find a grip they will use consistently (McCarty et al., 2001). During the first year of toddlerhood they also learn to hold a cup, scribble with a pencil or crayon, build a tower of 3 to 4 blocks, and turn the pages of a book (Kopp, 2003).

Toddlers become capable of eating with a spoon and show a right- or left-hand preference for self-feeding.

The second year of toddlerhood, from the second to the third birthday, is marked by fewer major advances and more by extending the advances of the previous year. The block tower rises to 8 to 10 blocks, the scribbling becomes skillful enough to draw a semistraight line, and an attempt to copy a circle may result in something that actually looks somewhat like a circle (Chen et al., 2010). Toddlers in their third year of life can even begin to brush their teeth, with a little assistance. **Table 5.2** summarizes the major milestones in fine motor development during toddlerhood.

TABLE 5.2 Milestones of Fine Motor Development in Toddlerhood

Age (*Months*)	Milestone
7–15	Hold writing instrument (e.g., pencil, crayon)
8–16	Coordinate actions of both hands
10–19	Build tower of 2 blocks
10–21	Scribble vigorously
12–18	Feed self with spoon
15–23	Build tower of 3–4 blocks
20–28	Draw straight line on paper
24–32	Brush teeth
26–34	Build tower of 8–10 blocks
29–37	Copy circle

Source: Based on Adolph & Berger (2006); Bayley (2005); Coovadia & Wittenberg (2004); Frankenburg et al. (1992); Murkoff et al. (2006).
Note: The range shown is the age period at which 90% of toddlers achieve the milestone.

WHAT HAVE YOU LEARNED?

Study and Review at MyDevelopmentLab

1. What are the most important nutritional deficiencies in toddlerhood, and how do they influence health?
2. How do synaptic density and synaptic pruning change during toddlerhood?
3. What are the two reasons why night-waking increases from 1½ to 2 years of age?
4. How do sleeping arrangements change in the course of toddlerhood in traditional cultures?
5. To what extent do cultures restrict toddlers' movements, and why?
6. What specific fine motor abilities do toddlers lack at their first birthday but develop by their third birthday?

Socializing Physical Functions: Toilet Training and Weaning

Eating and eliminating wastes are two physical functions that humans share with other animals, but for humans these functions become socialized from an early age. Here we look at how toddlers become toilet trained and weaned.

Toilet Training

LEARNING OBJECTIVE 5.5

Compare and contrast the process and timing of toilet training in developed countries and traditional cultures.

The toddler years are when most children first learn to control their urination and defecation and become "toilet trained." Expectations for exactly when during the toddler years this should happen have changed substantially over the past half century in the United States (Blum et al., 2004). During the mid-20th century, pediatricians advocated early toilet training—the earlier the better—and in 1957 a study reported that 92% of American toddlers were toilet trained by the time they were 18 months old (Goode, 1999). Gradually, pediatricians and parents concluded there was little reason to require toilet training so early, and in more recent studies only about 25% of toddlers were toilet trained by 18 months old and only about 60% by their third birthday (Barone et al., 2009; Schum et al., 2001). We'll look at the history of toilet training in more depth in the **Historical Focus: The History of Toilet Training feature** on page 184.

THINKING CULTURALLY

How might a culture's values of individualism or collectivism influence toilet-training practices?

Today, most American pediatricians believe it is best to be patient with toddlers' progress toward toilet training, and to time it according to when the toddler seems ready (American Academy of Pediatrics [AAP], 2001). Most toddlers show signs of readiness some time between 18 and 30 months of age. Some key signs are

- staying "dry" for an hour or two during the day;
- regular bowel movements, occurring at about the same time each day;
- increased anticipation of the event, expressed through looks or words;
- directly asking to use the toilet or to wear underwear instead of a diaper.

Although toilet training usually begins during the toddler years, it rarely happens overnight. Typically it is a process that continues over several weeks, months, or even years. The earlier toilet training begins, the longer it takes to complete it (Blum et al., 2003). After children are generally able to control urination and defecation, they may occasionally have an "accident" when they are especially tired, excited, or stressed (Murkoff et al., 1996). Even after children have ceased having accidents during the day, they may not have consistent control at night. For this reason, it is common for children to wear "training pants"—in between diapers and underwear—for a period after learning toilet training. Even at age 5, about one-fourth of children have an occasional accident, usually at night (Fritz & Rockney, 2004).

Toddlers in developed countries usually have this process guided and supervised by parents, but for toddlers in traditional cultures, older siblings and other older children are often the guides. *Toilet training* is probably not the right term to use to refer to this process in traditional cultures, because they rarely have toilets—so let's call it "controlled elimination." By age 2 or 3 most toddlers in traditional cultures spend the majority of their waking hours in groups with children of mixed ages, and they learn controlled elimination from watching and imitating other children (LeVine, 1994). Parents may be involved as well. For example, among the Ifaluk people on the Pacific Ocean islands of Micronesia, when toddlers reach about age 2 their parents encourage them to relieve themselves in the nearby lagoon, not in or near the house, and reprimand them if they fail to comply (Le, 2000).

HISTORICAL FOCUS The History of Toilet Training

Approaches to toilet training have shifted substantially in Western societies over the past century. These shifts provide an instructive example of how changes in cultural beliefs about children can interact with changes in technology.

In the historical record of the past 200 to 300 years, the emphasis was on teaching children to use the toilet at the earliest age possible (Mechling, 2008). Methods were often coercive, including scolding or physical punishment in case of an "accident." One U.S. government manual even urged parents to enforce the regularity of bowel movements for *infants* by inserting a curved stick into the baby's rectum at precise times each day (U.S. Department of Labor, 1935).

Approaches to toilet training have changed in recent decades with experts now recommending a "child-centered" approach.

These early, harsh approaches to toilet training reflected a cultural belief in the appropriateness of strong parental authority (Dewar, 2010). Toddlers were to be toilet trained as soon as possible so that parents would be relieved of the mess and work of changing and cleaning their diapers; the needs of the parents were the top priority, not the needs of the children (Mechling, 2008). However, technological reasons—more precisely, the lack of technologies—were also involved. Keep in mind that before the late 20th century all diapers were cloth and had to be washed by hand. This certainly gave parents a strong incentive to toilet train their children early. Keep in mind, too, that families before the late 20th century typically had three, four, or more children, and by the time the youngest one was in diapers, parents would have been changing and washing diapers for a long, long time.

Methods of toilet training evolved in the late 20th century, supported by changes in parenting beliefs as well as developments in technology. Parents became less concerned with establishing authority over children and more concerned with children's psychological

Toddlers in traditional cultures often breast-feed until they are about 2 years old. Here, a mother of the Yanomamo people of the Amazon rain forest nurses her toddler.

the infant, and much more capable of exercising intentional behavior. The toddler can also speak up, in a way the infant cannot, to make demands and protest prohibitions.

Consequently, most traditional cultures have customary practices for weaning toddlers from the breast. Often, the approach is gentle and gradual at first, but becomes harsher if the toddler resists. For example, in Bali (an island that is part of Indonesia) parents feed their babies some solid food from the first few days of life, and attempt gradual weaning beginning about age 2. However, if the gradual approach does not work, mothers coat their breasts with bitter-tasting herbs (Deiner, 2000). Similarly, toddlers in rural villages in Turkey are weaned at about age 2, but if they persist in trying to breast-feed, the mother coats her breasts with tomato paste. The child usually cries and protests, but the method works without fail (Delaney, 2000).

Other cultures separate mother and toddler during weaning, so that the toddler will have no choice but to get used to life without breast feeding. Among the Fulani people of West Africa, toddlers are sent to their grandmother's household during weaning. If the toddler complains about not breast feeding, the grandmother may offer her own breast, but the toddler quickly loses interest upon discovering that there is no milk in it (Johnson, 2000).

Study and **Review** at **MyDevelopmentLab**

WHAT HAVE YOU LEARNED?

1. How have views on toilet training changed throughout history?
2. What are the signs that toddlers are ready to begin toilet training?
3. How does controlled elimination in traditional cultures differ from toilet training in developed countries?
4. Why is weaning more difficult in toddlerhood than in infancy?
5. What practices do traditional cultures use if toddlers resist weaning?

Section 1 VIDEO GUIDE Gross Motor Development Across Cultures (Length: 4:22)

In this video, we observe how gross motor skills such as crawling and walking proceed at different rates within and across cultures. We also interview Karen Adolph, a leading researcher of motor development.

1. Karen Adolph notes that in some cultures, toddlers do not crawl at all or learn to crawl only after they have mastered walking. What cultural factors might influence this?

2. Should parents be concerned if their child takes longer than other children to achieve a gross motor milestone, such as learning to walk? Why or why not?

3. According to Adolph's longitudinal research, at what point do infants and toddlers have a solid grasp of their gross motor abilities? What is the relevance of this for parents who are trying to baby-proof their house?

Watch the **Video** Gross Motor Development Across Cultures at **MyDevelopmentLab**

SECTION 2 COGNITIVE DEVELOPMENT

LEARNING OBJECTIVES

5.7 Outline the cognitive achievements of toddlerhood in Piaget's theory.

5.8 Explain Vygotsky's sociocultural theory of cognitive development and contrast it with Piaget's theory.

5.9 Summarize the evidence for the biological and evolutionary bases of language.

5.10 Describe the milestones in language development that take place during the toddler years.

5.11 Identify how parents' stimulation of toddlers' language varies across cultures and evaluate how these variations relate to language development.

Cognitive Development Theories

You have already been introduced to Piaget and his theory of infant cognitive development (see Chapter 4). Here his theory continues into toddlerhood. Also, a more cultural perspective on children's cognitive development is presented, in the theory of Lev Vygotsky.

Cognitive Development in Toddlerhood: Piaget's Theory

Outline the cognitive achievements of toddlerhood in Piaget's theory.

LEARNING OBJECTIVE 5.7

Piaget proposed that cognitive development during the first 2 years of life follows a sequence of six sensorimotor stages. As we saw in Chapter 4, during infancy the primary cognitive advance of the first four stages of sensorimotor development is from simple reflexes to intentional, coordinated behavior. Neonates have a wide range of reflexes and little intentional control over their behavior, but by the end of the first year infants have lost most of their reflexes and can perform intentional actions that combine schemes, such as moving one object aside in order to reach another. In the second year of life—during toddlerhood—the final two stages of sensorimotor development are completed.

SENSORIMOTOR STAGE 5: TERTIARY CIRCULAR REACTIONS Piaget called the fifth stage of sensorimotor development *tertiary circular reactions* (age 12–18 months). In this stage, toddlers intentionally try out different behaviors to see what the effects will be. In the previous stage, *secondary circular reactions*, the action first occurs by accident and then is intentionally repeated, but in tertiary circular reactions the action is intentional from the beginning. Like secondary circular reactions, tertiary circular reactions are circular because they are performed repeatedly.

For example, at 17 months my twins discovered how to flush the toilet, and one day they flushed and flushed and flushed until the flushing system broke and the water began overflowing. I discovered this as I sat downstairs reading the newspaper and suddenly observed water whooshing out of the vents in the ceiling! I ran upstairs and there they were, standing in three inches of water, giggling with glee, absolutely delighted. I don't recall thinking of Piaget at that moment, but I'll bet he would have been pleased. To Piaget, in this stage toddlers become like little scientists, experimenting on the objects around them in order to learn more about how the world works. My twins certainly learned that day about what happens when you flush a toilet repeatedly.

SENSORIMOTOR STAGE 6: MENTAL REPRESENTATIONS The final stage of sensorimotor development, from 18 to 24 months, is the stage of **mental representations**. Now, instead of

mental representations Piaget's final stage of sensorimotor development in which toddlers first think about the range of possibilities and then select the action most likely to achieve the desired outcome

deferred imitation ability to repeat actions observed at an earlier time

trying out a range of actions as in tertiary circular reactions, toddlers first think about the possibilities and select the action most likely to achieve the desired outcome. Piaget gave the example of his daughter Lucienne, who sought to obtain a small chain from inside the matchbox where her father had placed it. First she turned the box upside down; then she tried to jam her finger into it, but neither of these methods worked. She paused for a moment, holding the matchbox and considering it intently. Then she opened and closed her mouth, and suddenly slid back the cover of the matchbox to reveal the chain (Crain, 2000). To Piaget, opening and closing her mouth showed that she was pondering potential solutions, then mimicking the solution that had occurred to her.

Mental representation is a crucial milestone in cognitive development, because it is the basis of the most important and most distinctly human cognitive abilities, including language. The words we use are mental representations of objects, people, actions, and ideas.

OBJECT PERMANENCE IN TODDLERHOOD Object permanence also develops further during toddlerhood. As described in Chapter 4, by their first birthday infants will look for an object that they observe being hidden behind or under another object. However, even at 12 months they still make the "A-not-B error." That is, if they find an object under blanket A, and then a second blanket B is added and they observe the object being hidden under blanket B, they nevertheless tend to look under blanket A, where they found the object the first time.

Toddlers learn to avoid the A-not-B error and search for the object where they last saw it hidden. However, even though the A-not-B error is less common in toddlerhood than in infancy, search errors happen occasionally on this task in toddlerhood and even into early childhood, up to ages 4 and 5 (Hood et al., 2003; Newcombe & Huttenlocher, 2006). But we can say with some confidence that toddlers have attained object permanence once they generally avoid the A-not-B error.

Object permanence is a major advance of cognitive development in toddlerhood, but it is not a distinctly human achievement. In fact, chimpanzees and human toddlers have equal success on object permanence tasks at age 2 (Call, 2001; Collier-Baker & Suddendorf, 2006). Understanding the permanence of the physical world is crucial to being able to function in that world, so it is not surprising that humans and nonhuman primates would share this fundamental ability (Brownell & Kopp, 2007).

Toddlers' play is often based on deferred imitation. Here, a toddler in Peru offers a bottle to her doll.

DEFERRED IMITATION The ability for mental representation of actions also makes possible **deferred imitation**, which is the ability to repeat actions observed at an earlier time. Piaget's favorite example of deferred imitation involved his daughter Jacqueline, who witnessed another child exploding into an elaborate public tantrum and then repeated the tantrum herself at home the next day (Crain, 2000). Deferred imitation is a crucial ability for learning because it means that when we observe something important to know, we can repeat it later ourselves. Deferred imitation is a frequent part of toddlers' pretend play, as they observe the actions of other children or adults—making a meal, feeding a baby, digging a hole—and then imitate those actions later in their play (Lillard, 2007).

Piaget proposed that deferred imitation begins at about 18 months, but subsequent research has shown that it develops much earlier than he had thought (Bauer, 2006). Deferred imitation of facial expressions has been reported as early as 6 weeks of age, when infants exposed to an unusual facial expression from an unfamiliar adult imitated it when the same adult appeared before them the next day (Meltzoff & Moore, 1994). At 6 months of age, infants can imitate a simple sequence of events a day later, such as taking off a puppet's glove and shaking it to ring a bell inside the glove (Barr et al., 2003).

However, if there is a longer delay, toddlers are more proficient at deferred imitation than infants are. In a series of studies, children 9, 13, and 20 months old were shown two-step sequences of events such as placing a car on a track to make a light go on, then pushing a rod to make the car run down a ramp (Bauer et al., 2000; 2001; 2003). After a 1-month interval, shown the same materials, fewer than half of the 9-month-olds could imitate the steps they had seen previously, compared with about two-thirds of the 13-month-olds and nearly all the 20-month-olds. Other studies have shown that better deferred imitation among toddlers than among infants may be due principally to advances in the maturity of the brain. Specifically, the *hippocampus*, that part of the brain especially important in long-term memory encoding and recall, is still in a highly immature state of development during infancy but matures substantially during toddlerhood (Bauer et al., 2003; Liston & Kagan, 2002).

APPLYING YOUR KNOWLEDGE

Give an example of real-life learning by deferred imitation at age 2, 7, 14, and 25.

Explore the **Concept** Encoding, Storage, and Retrieval in Memory at **MyDevelopmentLab**

CATEGORIZATION Piaget also believed that mental representation in toddlerhood is the basis of categorization. Once we are able to represent an image of a house mentally, for example, we can understand the category "house" and understand that different houses are all part of that category. A toddler can observe houses of different colors, styles, and sizes and still recognize that they all fall under the same general category of "house." These categories, in turn, become the basis for language, because each noun and verb represents a category (Waxman, 2003). The word *truck* represents the category "truck" containing every possible variety of truck; the word *run* represents the category "run" containing all varieties of running, and so on.

Here, too, recent experiments seem to indicate that Piaget underestimated children's early abilities. Infants and toddlers are able to do more than he had thought. Even infants as young as a few months old have been shown to have a rudimentary understanding of categories. This can be demonstrated by their patterns of looking at a series of images. As we have seen, infants tend to look longer at images that are new or unfamiliar, and their attention to images is often used in research to infer what they know and do not know. In one study, 3- and 4-month-old infants were shown photographs of cats (Quinn et al., 1993). After a series of cat photos, the infants were shown two new photos, one of a cat and one of a dog. They looked longer at the dog photo, indicating that they had been using a category for "cat," and looked longer at the dog photo because it did not fit.

However, research has generally confirmed Piaget's insight that categorization becomes more advanced during toddlerhood. For example, one study compared children who were 9, 12, and 18 months old (Gopnik et al., 1999). The children were given four different toy horses and four different pencils. At 9 months, they played with the objects but made no effort to separate them into categories. At 12 months, some of the children would place the objects into categories and some would not. By 18 months, nearly all the children would systematically and deliberately separate the objects into a "horse" category and a "pencil" category.

By the time they are 2 years old, toddlers can go beyond the appearance of objects to categorize them on the basis of their functions or qualities. In a study demonstrating this ability, 2-year-olds were shown a machine and a collection of blocks that appeared to be identical (Gopnik et al., 1999). Then they were shown that two of the blocks made the machine light up when placed on it, whereas others did not. The researcher picked up one of the blocks that had made the machine light up and said, "This is a blicket. Can you show me the other blicket?" The 2-year-olds were able to choose the other block that had made the machine light go on, even though it looked the same as the blocks that had not had that effect. Although *blicket* was a nonsense word the toddlers had not heard before, they were able to understand that the category "blicket" was defined by causing the machine to light up.

5.8 Vygotsky's Cultural Theory of Cognitive Development

LEARNING OBJECTIVE

Explain Vygotsky's sociocultural theory of cognitive development and contrast it with Piaget's theory.

zone of proximal development difference between skills or tasks that children can accomplish alone and those they are capable of performing if guided by an adult or a more competent peer

private speech in Vygotsky's theory, self-guiding and self-directing comments children make to themselves as they learn in the zone of proximal development and have conversations with those guiding them; first spoken aloud, then internally

scaffolding degree of assistance provided to the learner in the zone of proximal development, gradually decreasing as the learner's skills develop

Watch the **Video** Zone of Proximal Development at **MyDevelopmentLab**

APPLYING YOUR KNOWLEDGE

Think of a recent time when you have used private speech. What was it about the task that evoked private speech on that occasion?

Although most studies of toddlers' cognitive development pay little attention to cultural context, in recent years a cultural approach to cognition has gained increased attention from scholars of human development. This approach is founded on the ideas of the Russian psychologist Lev Vygotsky (1896–1934). Vygotsky died of tuberculosis when he was just 37, and it took decades before his ideas about cognitive development were translated and recognized by scholars outside Russia. It is only in recent decades that his work has been widely influential among Western scholars, but his influence is increasing as interest in understanding the cultural basis of development continues to grow (Gardiner, 2001; Maynard & Martini, 2005; Segall et al., 1999).

Vygotsky's theory is often referred to as a *sociocultural theory*, because in his view cognitive development is always both a social and a cultural process (Daniels et al., 2007). It is social, because children learn through interactions with others and require assistance from others in order to learn what they need to know. It is cultural, because what children need to know is determined by the culture they live in. Vygotsky recognized that there are distinct cultural differences in the knowledge children must acquire—from agricultural skills in rural Asia, to caring for cattle in eastern Africa, to the verbal and scientific reasoning skills taught in Western schools. This is very different from Piaget's theory described earlier, which emphasizes the child's interactions with the physical environment and views cognitive development as essentially the same across cultures.

THE ZONE OF PROXIMAL DEVELOPMENT Two of Vygotsky's most influential ideas are the zone of proximal development and scaffolding. The **zone of proximal development** is the difference between skills or tasks that children can accomplish alone and those they are capable of performing if guided by an adult or a more competent peer. According to Vygotsky, children learn best if the instruction they are provided is within the zone of proximal development, so that they need assistance at first but gradually become capable of performing the task on their own. For example, children learning a musical instrument may be lost or overwhelmed if learning entirely on their own, but can make progress if guided by someone who already knows how to play the instrument.

As they learn in the zone of proximal development and have conversations with those guiding them, children begin to speak to themselves in a self-guiding and self-directing way, first aloud and then internally. Vygotsky called this **private speech** (Winsler, 2009). As children become more competent in what they are learning, they internalize their private speech and gradually decrease its use. Toddlerhood and early childhood are crucial periods in Vygotsky's theory, because it is during these life stages that children are most likely to use private speech and make the transition from using it aloud to using it internally (Feigenbaum, 2002). However, private speech continues throughout life. In fact, Vygotsky believed that private speech was necessary to all higher order cognitive functioning. In recent years, studies have shown that adolescents and adults use private speech when solving tasks of diverse kinds and diverse levels of difficulty (Medina et al., 2009).

Another key idea in Vygotsky's theory is **scaffolding**, which is the degree of assistance provided to children in the zone of proximal development. According to Vygotsky,

In Vygotsky's theory, children's cognitive development is always both social and cultural. Here, a father in the Middle Eastern country of Oman shows his son how to weave a basket.

scaffolding should gradually decrease as children become more competent at a task. When children begin learning a task, they require substantial instruction and involvement from an adult or more capable peer; but as they gain knowledge and skill, the teacher should gradually scale back the amount of direct instruction provided. For example, when infants and toddlers first learn language, parents' statements to them are usually very simple, but they become more complex as children's language mastery grows (Capone & McGregor, 2005). Scaffolding can occur at any age, whenever there is someone who is learning a skill or gaining knowledge from someone else.

Watch the **Video** Scaffolding at **MyDevelopmentLab**

Scaffolding and the zone of proximal development underscore the social nature of learning in Vygotsky's theory. In his view, learning always takes place via a social process, through the interactions between someone who possesses knowledge and someone who is in the process of obtaining knowledge. The ideas of the zone of proximal development and scaffolding have been applied to older children's learning as well, and will be explored further in later chapters.

THINKING CULTURALLY

Think of something that a toddler in your own culture would have to learn, and describe how you would teach the skill using the principles of the zone of proximal development and scaffolding.

GUIDED PARTICIPATION One scholar who has been important in extending Vygotsky's theory is Barbara Rogoff (1990; 1995; 1998; 2003). Her idea of **guided participation** refers to the interaction between two people (often an adult and a child) as they participate in a culturally valued activity. The guidance is "the direction offered by cultural and social values, as well as social partners" (Rogoff, 1995, p. 142) as learning takes place. As an example of guided participation, Rogoff (2003) describes a toddler and caregiver in Taiwan "playing school" together. As part of the game, the caregiver teaches the toddler to stand up and bow down to the teacher at the beginning and end of class, teaching not only the routine of the classroom but the cultural value of respect for teachers' authority. The teaching in guided participation may also be indirect. For example, from her research with the Mayan people of Guatemala, Rogoff (2003) describes how toddlers observe their mother making tortillas and attempt to imitate them. Mothers give them a small piece of dough and help their efforts along by rolling the dough into a ball and starting the flattening process but otherwise do not provide explicit teaching, allowing toddlers to learn through observing and then attempting to imitate their mother's actions.

guided participation teaching interaction between two people (often an adult and a child) as they participate in a culturally valued activity

WHAT HAVE YOU LEARNED?

Study and **Review** at **MyDevelopmentLab**

1. How does toddlers' understanding of object permanence develop beyond what infants know?
2. Describe the concepts of deferred imitation and categorization and explain how they develop during toddlerhood.
3. In what way is Vygotsky's theory a sociocultural theory?
4. How is scaffolding related to the zone of proximal development?
5. How is Rogoff's idea of guided participation similar to Vygotsky's zone of proximal development?

Language Development

Of all the qualities that distinguish humans from other animals, language may be the most important. Other species of animals have their own ways of communicating, but language allows humans to communicate about a vastly broader range of topics. Using language, humans can communicate about not just what is observable in the present, the way other

animals might communicate about food or predators in their immediate environment, but about an infinite range of things beyond the present moment. With language, too, we can communicate not just about things that exist but about things that might exist, things that we imagine. As linguist Derrick Bickerton remarks, "Only language could have broken through the prison of immediate experience in which every other creature is locked, releasing us into infinite freedoms of space and time" (Leakey, 1994, p. 119).

In Chapter 4 we looked at the beginnings of language in infancy. However, by the end of infancy most children can only speak a few words. It is during toddlerhood that language development has its most rapid and important advances. Toddlers go from speaking a few words at their first birthday to being fluent users of language by their third birthday. Let's examine the course of this remarkable achievement, looking first at the biological and evolutionary bases of language, then at specific language milestones of toddlerhood, and finally, at the cultural and social context of toddlers' language use.

The Biological and Evolutionary Bases of Language

5.9 LEARNING OBJECTIVE Summarize the evidence for the biological and evolutionary bases of language.

infinite generativity ability to take the word symbols of a language and combine them in a virtually infinite number of new ways

Broca's area portion of the left frontal lobe of the human brain that is specialized for language production

Wernicke's area portion of the left temporal lobe of the human brain that is specialized for language comprehension

You may have heard that some primates have learned how to use language. Attempts to teach language to apes have a long history in the social sciences, going back over a half century. In the earliest attempts, researchers treated baby chimpanzees as closely as possible to how a human infant would be treated, having the chimpanzees live in the researcher's household as part of the family and making daily efforts to teach the chimps how to speak. Years of these efforts yielded nothing but the single word "mama"—and a badly disordered household. It turned out that chimpanzees, like other nonhuman primates, lack the vocal apparatus that makes human speech possible.

In the 1960s, researchers hit on the clever idea of teaching apes sign language; these attempts were much more successful. One famous chimpanzee, Washoe, learned to use about 100 signs, mostly involving requests for food (Small, 2001). She even learned to lie and to make jokes. However, she never learned to make original combinations of signs (with one possible exception, when she saw a duck for the first time and signed "water bird"). Mostly, Washoe and other primates who have learned sign language simply mimic the signs they have been taught by their human teachers. They lack the most important and distinctive feature of human language, which is **infinite generativity**, the ability to take the word symbols of a language and combine them in a virtually infinite number of new ways.

Chimpanzees can learn to use some sign language in a limited way, but they lack the infinite generativity of human language.

A variety of human biological characteristics shows that we are a species uniquely built for language (Kenneally, 2007). First, humans have a unique vocal apparatus. We are able to make a much wider range of sounds than the other primates because, for us, the larynx is located lower in the throat, which creates a large sound chamber, the pharynx, above the vocal cords. We also have a relatively small and mobile tongue that can push the air coming past the larynx in various ways to make different sounds, and lips that are flexible enough to stop and start the passage of air.

Second, two areas in the left hemisphere of the human brain are specifically devoted to language functions (Nakano & Blumstein, 2004; Pizzamiglio et al., 2005). **Broca's area** in the left frontal lobe is specialized for language production, and **Wernicke's area** in the left temporal lobe is specialized for language comprehension (see **Figure 5.4**). If damage to one of these areas occurs in adulthood the specialized language function of the area is also damaged; but if damage takes place in childhood, other areas of the brain can compensate—with compensation being greater the younger the brain injury takes

- body parts ("hair," "tummy"),
- moving objects ("car," "truck"),
- foods ("milk," "cookie"),
- actions ("eat," "bath"),
- household items ("cup," "chair"),
- toys ("ball," "bear"),
- greetings or farewells ("hi," "bye-bye").

Toddlers first learn words they need to use in practical ways to communicate with the people around them, usually as part of shared activities (Newman, 2007). Often at this age they speak in partial words, for example, "bah" for bird, "meh" for milk, or "na-na" for "banana."

From 12 to 18 months most toddlers use one word at a time, but a single word can have varied meanings. Toddler's single words are called **holophrases**, meaning that for them a single word can be used to represent different forms of whole sentences (Flavell et al., 2002). For example, "cup" could mean "Fill my *cup* with juice," or "I dropped the *cup* on the floor," or "Hand me my *cup*, I can't reach it," or "Here, take this *cup*," depending on when and how and to whom it is said.

Toddlers exhibit overextension when they use a single word (such as "raspberry") to represent a variety of related objects (such as strawberries and other red berries).

Another way toddlers make the most of their limited vocabulary is to have a single word represent a variety of related objects. This is called **overextension** (Bloom, 2000). For example, when the son of two language researchers learned the name of the furry family dog, Nunu, he applied it not only to the original Nunu but to all dogs, as well as to other fuzzy objects such as slippers, and even to a salad with a large black olive that apparently reminded him of Nunu's nose (de Villiers & de Villiers, 1978).

Toddlers also exhibit **underextension**, applying a general word to a specific object (Woodward & Markman, 1998). When I was a child, my family had a cat named Kitty, who received that name because my brother was told that it was "the kitty," and began calling it Kitty, and the name stuck. He did not realize that *kitty* was the (slang) name for the larger category, "cats," but mistook it for the proper name of that particular cat. Underextension often occurs in this way, with a toddler first applying a new word to a specific object, then learning later to apply it to a category of objects.

Here, as at all ages, *production* (speaking) lags behind *comprehension* (understanding) in language development. Although toddlers do not reach the fifty-word milestone in production until about 18 months old, they usually achieve fifty-word comprehension by about 13 months old (Menyuk et al., 1995). During toddlerhood, comprehension is a better predictor of later verbal intelligence than production is (Reznick et al., 1997).

EIGHTEEN MONTHS TO 24 MONTHS: THE NAMING EXPLOSION After learning to speak words at a slow rate for the first half of their second year, toddlers' word production suddenly takes off from 18 to 24 months. The pace of learning new words doubles, from one to three words per week to five or six words per week (Kopp, 2003). This is known as the *naming explosion* or *vocabulary spurt* (Bloom et al., 1985; Goldfield & Reznick, 1990). After just one time of being told what an object is called, toddlers this age will learn it and remember it, a process called **fast mapping** (Gopnik et al., 1999; Markman & Jaswal, 2004). Fast mapping is due not just to memory but to toddlers' ability to quickly infer the meaning of words based on how the word is used in a sentence and how it seems to be related to words they already know (Dixon et al., 2006). By their second birthday, toddlers have an average vocabulary of about 200 words (Dale & Goodman, 2004). This rapid pace of learning and remembering words will continue for years, but it is especially striking at 18 to 24 months because this is when it begins (Ganger & Brent, 2004). Girls' vocabulary increases faster than boys' vocabulary during this period, initiating a gender difference in verbal abilities that will persist throughout childhood (Lovas, 2011).

Two of the most notable words toddlers learn during this period are *gone* and *no*. Using "gone" reflects their growing awareness of object permanence, as it signifies that

holophrase single word that is used to represent a whole sentence

overextension use of a single word to represent a variety of related objects

underextension applying a general word to a specific object

fast mapping learning and remembering a word for an object after just one time of being told what the object is called

something has disappeared from view but still exists somewhere (Gopnik et al., 1999). Using "no" reflects their budding sense of self ("me," "my," and "mine" also begin to be used at this age). Saying "no" can be short for "You may want me to do to that, but I don't want to do it!" Of course, they also begin to hear "No!" more often around this age, as their mobility and curiosity leads them to behavior that the adults around them may regard as dangerous or destructive (Kopp, 2003). During this 18- to 24-month period they also learn to name one or two colors, at least six body parts, and emotional states like "tired" and "mad" (Eisenberg et al., 1996; Kopp, 2003).

Toward the end of the 18- to 24-month period, toddlers begin to combine spoken words for the first time. Their first word combinations are usually two words, in what is called **telegraphic speech** (Bloom, 1998; Brown, 1973). Telegraphic speech takes similar forms in a variety of languages, from English to German to Finnish to Samoan: "See doggie," "Big car," "My ball," "More cookie," or "Mommy gone" (Bochner & Jones, 2003; Slobin, 1972). Like a telegram in the old days, telegraphic speech strips away connecting words like *the* and *and*, getting right to the point with nouns, verbs, and modifiers.

An interesting feature of telegraphic speech is that it already shows an initial knowledge of syntax (word order). Toddlers say "See doggie," not "Doggie see"; they say "My ball," not "Ball my." Similar to the one-word holophrases used earlier, telegraphic speech implies more understanding of language than it states explicitly: "Big car" means "Look at the big car," "My ball" means "This is my ball," and so on.

Verbal production is the most striking advance of the 18- to 24-month period, but comprehension also advances notably as toddlers become faster and more efficient in processing words. In one series of experiments, toddlers 15 to 24 months old were shown pictures of two objects at a time while a recorded voice said "Where's the _____?" and named one of the objects (Fernald et al., 2006). At 15 months, toddlers waited until the whole word had been spoken before looking at the object the word referred to, but by 24 months they would shift their gaze even before the word had been completely spoken, for example looking at the shoe as soon as they heard the "sh" part spoken.

TWENTY-FOUR MONTHS TO 36 MONTHS: BECOMING ADEPT AT LANGUAGE During the third year, toddlers continue to expand their speaking vocabulary at the same rapid pace that began at 18 to 24 months. They learn to use prepositions such as *under*, *over*, and *through* (Eisenberg et al., 1996). They also use words that reflect a more complex understanding of categories. For example, they understand that a bear is not only a bear but also an animal (Kopp, 2003).

Watch the **Video** EMT Program and Language Development at **MyDevelopmentLab**

They continue to exhibit overextension and underextension, but with diminishing frequency as their vocabulary expands. They continue to use telegraphic speech as well, but now in three- and four-word statements ("Ball under bed!") rather than two words. Increasingly during the third year they begin to speak in short, complete sentences. At this age my son Miles would point to the moon and protest, "It's too high!" as if he expected us to do something about it.

By the end of the third year most toddlers are remarkably skilled language users (Maratsos, 1998). They can communicate with others about a wide range of topics. They can speak about events that are happening in the present as well as about past and future events. Toddlers raised in homes where Chinese is spoken have learned that raising or lowering the pitch of a word changes its meaning. French toddlers have learned how to make nasal sounds and say "Voilà!" and !Kung San toddlers in Botswana have learned how to click their tongues against various parts of their mouths to make the words of their language (Small, 2001). Although their pronunciation of words is not as precise as it will become later, by the time they reach age 3 most toddlers can speak clearly enough to make themselves understood about nearly anything they wish.

Furthermore, without any explicit instruction, by the end of the third year toddlers have learned the rules of their language, no matter how complex those rules may seem to someone who does not speak it. Consider this example, from Turkish (Slobin, 1982). In

telegraphic speech two-word phrases that strip away connecting words, such as *the* and *and*

Turkish, the rules of syntax (word order) are different from English. In English, "The girl fed the dog" has quite a different meaning from "The dog fed the girl." The *subject* (girl) is supposed to go first, followed by the *verb* (fed) and then the *object* (dog). However, in Turkish the object is indicated not by the syntax but by attaching the suffix *u*. So, "The girl fed the dog-u" means the same as "The dog-u fed the girl." Turkish toddlers use the *u* rule correctly by their third year, just as English-speaking children learn the correct use of English syntax by their third year (Aksoy & Slobin, 1985).

The marvelous ability that young children have to learn the rules of their language is one more indication of the biological basis of language. A half century ago, at a time when many psychologists were arguing that language has no biological origin and children learn it solely through imitation and parent's reinforcement, linguist Noam Chomsky (1957, 1969) protested that language is too complex to be learned in this way. Observing that all children learn the basic rules of grammar of their language at about the same age, 2 to 3 years old, Chomsky proposed that children are born with a **language acquisition device (LAD)** that enables them to perceive and grasp quickly the grammatical rules in the language around them. Today language researchers generally agree that language development is a biological potential that is then nurtured by social interaction, although there is still a lively debate about the nature of the biological foundation of language and the kinds of social stimulation needed to develop it (Hoff, 2009).

Toddlers' language mastery is evident not only in how well they use the rules of their language but also in the mistakes they make. As they learn the grammar of their language, they make mistakes that reflect **overregularization**, which means applying grammatical rules even to words that are an exception to the rule.

Here are two examples from English that illustrate overregularization. First, the plural of most English nouns can be obtained by adding *s* to the singular form, but there are irregular exceptions, such as "mice" as the plural of "mouse," and "feet" as the plural of "foot." In the third year, toddlers sometimes make mistakes with these kinds of words, saying "mouses" instead of "mice" and "foots" instead of "feet." Second, the rule for the past tense of an English verb is to add *ed* to the end, but there are irregular exceptions, such as "went" as the past tense of "go" and "threw" as the past tense of "throw." In the third year toddlers sometimes make mistakes with these exceptions, saying "Mommy *goed* to the store" or "I *throwed* the ball." However, it is a testament to toddlers' language mastery that even by the third year, mistakes of this kind are rare (Bohner & Jones, 2003).

APPLYING YOUR KNOWLEDGE

Give some examples of overregularization in addition to the ones provided here.

Learning Language in a Social and Cultural Context

5.11 LEARNING OBJECTIVE

Identify how parents' stimulation of toddlers' language varies across cultures and evaluate how these variations relate to language development.

Humans are biologically built for learning language, but not for learning any specific language. There are over 60,000 different human languages in the world (Small, 2001), but none of them come preinscribed on our brains. Whatever language we learn must come from our social and cultural environment.

This was first shown in a bizarre experiment conducted about 800 years ago. Frederick II, the Holy Roman Emperor (1194–1250), decided he wanted to find out what language infants would speak "naturally," if they were left to their own resources. He chose a group of neonates in an orphanage and instructed their caregivers never to speak in their presence. What language would the babies begin to speak spontaneously, on their own? Would it be Latin, the language of scholars at that time? Would it be German, Frederick's own language, or (God forbid) French, the language of his chief rivals?

The answer turned out to be, as you may have guessed, none of the above. Tragically, all of the infants died. This is a poignant illustration of how we are poised for language to be part of the human social environment, and of how humans need language to develop properly, not just in their language development but in their social development.

language acquisition device (LAD) according to Chomsky, innate feature of the brain that that enables children to perceive and grasp quickly the grammatical rules in the language around them

overregularization applying grammatical rules even to words that are the exception to the rule

PARENTS' STIMULATION OF TODDLERS' LANGUAGE DEVELOPMENT What kind of social environment do toddlers need in order to develop their language skills? In American research, the focus has been on how parents foster language development in young children. Several studies have examined social-class differences in parents' language stimulation and how this is related to the pace of toddlers' language development (Hoff, 2004; Lee & Burkam, 2002). For example, one study videotaped parent–child interactions in the homes of low-, middle-, and high-income families on several occasions, beginning when the children were 7 to 9 months old and continuing until they were about 30 months old (Hart & Risley, 1999). There were striking differences in how many words were spoken to children of different income levels. Parents in high-income families talked the most to their children, averaging about 35 words a minute; parents in middle-income families talked to their children an average of about 20 words a minute; and parents of low-income families provided the least language stimulation, just 10 words per minute. By 30 months old there were substantial differences in the toddlers' vocabularies, averaging 766 words in the high-income families and just 357 words in the low-income families.

In another study, children and mothers were videotaped in laboratories, first when the children were 9 months old and then when they were 13 months old; each mother–child pair engaged in free play with toys provided by the experimenters (Tamis-LeMonda et al., 2001). The study focused on maternal responsiveness to the children's vocalizations and how this related to attaining language milestones when the children were reassessed later in toddlerhood, in their third year. Maternal responsiveness included affirmations ("Good job!" for speaking a word correctly), imitations (saying "cup" after the child said "ca" and pointed to a cup), and expansions (saying "Where did the ball go?" after the child said "ba?"). Maternal responsiveness was positively correlated with earlier timing of all four language milestones later in toddlerhood: first word, 50-word spoken vocabulary, first word combinations, and first use of past tense. That is, children whose mothers responded more often to their vocalizations tended to reach these milestones earlier than other children.

So, it seems there is solid evidence that the family language environment in infancy and toddlerhood influences children's language development at least through toddlerhood, right? Well, not so fast. These studies provide classic examples of the hazards of interpreting relations between parents' behavior and children's outcomes in biological families, due to passive genotype–environment effects (see Chapter 2). Can you see why? The studies do show that parents' language stimulation is related to toddlers' language achievements. However, the parents provided not only the language environment to the children in the study but their genotype as well. There is ample evidence from adoption and twin studies that verbal abilities are inherited to a substantial extent (Loehlin et al., 1997). Consequently, it is not clear how much the relation between parental behavior and children's development was due to parents' behavior and how much of it was due to genes—including the genes that influence verbal abilities. In studies of parents and children in biological families, genes and environment are *confounded*, which means they are closely related and difficult to separate.

This is not to say that family language environments do not matter in toddlers' language development. Of course they do. It is just that, in studies with this kind of confound between genetics and environment, it is impossible to tell how much. To identify more definitely how much the family language environment matters, it would be necessary to conduct these kinds of studies in adoptive families or twin families, but so far, in studies of toddler's language development, this has not been done. In early childhood and beyond, the influence of teacher's language use on children's language development provides more definite evidence of an environmental effect, because teachers and children have no genetic relationship (Huttenlocher et al., 2002).

CULTURAL VARIATIONS IN TODDLERS' LANGUAGE ENVIRONMENTS The other notable feature of most research on toddlers' language development, in addition to the passive genotype–environment issue just described, is its assumption that most toddler language use takes

Toddlers in traditional cultures often experience a language-rich environment. Here, a Mongolian family shares a meal and conversation.

place in a parent–toddler dyad—just the two of them. This assumption may be true for the families being studied in developed countries, but the social environment that most toddlers experience worldwide is much different from this, and consequently their language environment differs as well.

Once they learn to walk and begin to talk, toddlers in most cultures spend most of their days not with their parents but in mixed-age groups of other children, including an older girl, often an older sister, who is mainly responsible for caring for them. When toddlers are with their parents, usually many other people are around as well, such as siblings, extended-family members, and neighbors. This makes for a language-rich environment, because there is talking going on around them almost constantly, with so many people present. However, relatively little of this talk may be directed specifically at the toddler, because there are so many other people around and because others may not see it as necessary to speak directly to toddlers in order to stimulate their language development.

In fact, the others in a toddlers' social environment may even see it as bad parenting to speak often with toddlers. The Gusii people of Kenya believe that encouraging young children to speak is a mistake, because it makes it more likely that they will grow up to be selfish and disobedient (see Chapter 4; Levine et al., 1994). Their children learn the Gusii language as proficiently as American children learn English, but they learn it from being frequently in social groups where adults and older children are using language, not from having their language development stimulated directly in frequent daily interactions with their parents.

This is not an isolated example. Studies comparing children in different cultures have found that direct stimulation of toddlers' language development is a practice encouraged in some cultures but discouraged in others. One study compared Japanese mothers and Canadian mothers in their interactions with their young children (Minami & McCabe, 1995). In Japanese culture, being talkative is considered impolite and undesirable, especially for males, because the Japanese believe it is better to blend in harmoniously with the group than to call attention to yourself (Markus & Kitayama, 2003; Rothbaum et al., 2001). Consequently, the Japanese mothers in the study often discouraged their children from talking, especially their boys. In contrast, the Canadian mothers encouraged their children to talk more, by asking them questions and suggesting they provide more details. This approach was interpreted by the researchers as being based on a belief system favoring individualism and self-expression.

As this study illustrates, in learning language children also learn a way of seeing the world and the values and beliefs of their culture. Another example of this can be found in Bambi Schieffelin's (1986, 1990) ethnography of the Kaluli people of New Guinea, a traditional culture where the people sustain life through hunting, fishing, and growing crops. In this culture, children spend most of their daily lives in a multiage extended-family group. Mothers rarely speak directly to infants, because they believe their babies would not understand. Instead, they sometimes speak on the infant's behalf, in a high-pitched voice (e.g., "Please feed me!").

Once infants grow to be toddlers and begin to talk, mothers and others direct speech at them. However, the emphasis is not on the toddlers expressing themselves and saying what they want and need, but on repeating what the other person has said. Mothers will say something on behalf of the toddler, such as "Give me the stick," then say the phrase "Say like that," encouraging the toddler to repeat what the mother has said just like she said it. Instead of the Western value of "Be yourself," which is promoted by asking toddlers questions about child-oriented topics, toddlers are being taught the value predominant among the Kaluli and many other cultures: "Do as you're told." In this way, the acquisition of language is simultaneously the acquisition of cultural beliefs.

APPLYING YOUR KNOWLEDGE . . . as a Day-Care Provider

You notice that some children in your classroom are very quiet while others are very talkative. What factors may contribute to these differences?

THINKING CULTURALLY

What are some of the ways that adults in your culture encourage—or discourage—toddlers' language use?

WHAT HAVE YOU LEARNED?

Study and Review at MyDevelopmentLab

1. What biological characteristics do humans have that makes language possible?
2. When did our biological capacity for language evolve, and how would the development of language have provided an evolutionary advantage?
3. What is the "naming explosion" and when does it occur?
4. What changes in language development take place during the third year, and what kinds of mistakes are 2- and 3-year-olds most likely to make?
5. What do American studies indicate about parental stimulation of toddlers' language development, and why are the results of these studies difficult to interpret?
6. How do Japanese and Canadian parents differ in the way they stimulate language in toddlers, and how are these variations related to cultural values?

Section 2 VIDEO GUIDE Language Development Across Cultures (Length: 7:40)

In this video, we talk to parents from different cultural backgrounds about how they communicate with their infants and toddlers and ask them what, if anything, they do to foster their child's language development.

1. Discuss the three factors mentioned in the clip that influence toddler language development. What are some additional factors that might also impact toddler language development?

2. Do you think that the U.S. mother interviewed here discussed a situation typical of most children across the U.S.? Why or why not?

3. Discuss your thoughts on the mother from Africa stating that she does not read to her baby because she is too young. What age do you think it is appropriate to begin reading to children and why?

Watch the Video Language Development Across Cultures at MyDevelopmentLab

SECTION 3 EMOTIONAL AND SOCIAL DEVELOPMENT

LEARNING OBJECTIVES

5.12 Describe how emotional development advances during toddlerhood and identify the impact of culture on these changes.

5.13 Describe the changes in self-development that take place during toddlerhood.

5.14 Distinguish between *sex* and *gender* and summarize the evidence for the biological basis of gender development.

5.15 Describe the essential features of attachment theory and identify the four classifications of attachment.

5.16 Identify the key factors influencing the quality of toddlers' attachment to their mothers, and explain what effect attachment quality has on development.

5.17 Summarize the major critiques of attachment theory, including the cultural critique.

5.18 Compare and contrast the typical patterns of father involvement with infants and toddlers in traditional cultures and developed countries.

5.19 Describe relationships with siblings, peers, and friends during toddlerhood.

5.20 Identify the characteristics of autism and recognize how autism affects prospects for children as they grow to adulthood.

5.21 Identify the typical rates of television use in toddlerhood and explain some consequences of toddlers' TV watching.

Emotional Development in Toddlerhood

Toddlerhood is the stage of life when we first learn how to regulate our emotions. As part of this process we learn emotions such as shame and guilt that reflect our responses to the expectations and requirements of others.

Toddlers' Emotions

5.12 LEARNING OBJECTIVE Describe how emotional development advances during toddlerhood and identify the impact of culture on these changes.

As toddlers become more self-aware, they learn that the people in their cultural environment regard some behaviors as good and others as bad, some as right and some as wrong, and they learn to feel negative emotions when they do something defined as bad or wrong. They also begin to learn how to regulate their emotions.

EMOTIONAL SELF-REGULATION From the early months of life, infants tend to show how they feel. Happy or sad, hungry or mad, they let you know. Gradually during the first year, infants develop the rudiments of emotional regulation. They learn to turn their attention away from unpleasant stimulation (Axia et al., 1999). The people around them soothe their distress with the kinds of strategies we discussed in Chapter 4, such as cuddling and rocking. In many cultures, frequent breast feeding is used as an emotional regulator, to quiet babies whenever they begin to fuss (DeLoache & Gottlieb, 2000; Levine et al., 1994).

During toddlerhood, emotional self-regulation advances in four ways (Kopp, 1989; Thompson & Goodvin, 2007).

1. First, toddlers develop *behaviors* that can help them regulate their emotions. For example, toddlers who are frightened may run to a trusted adult or older sibling, or cling to a comforting blanket or stuffed animal.

2. Second, toddlers use *language* to promote emotional self-regulation. As noted earlier in the chapter, from about 18 months old toddlers begin to use words to identify and talk about their emotions. Throughout toddlerhood and beyond, talking about feelings with others enhances children's understanding of their own and others' emotions, which in turn promotes their emotional self-regulation (Bugental & Grusec, 2006; Parke & Buriel, 2006).
3. Third, *external requirements* by others extend toddlers' capacities for emotional self-regulation. In toddlerhood, parents begin to convey and enforce rules that require emotional self-regulation: no hitting others no matter how angry you are, no jumping on the table no matter how happy you are, and so on (Calkins, 2007). Cultures vary in their requirements for emotional self-regulation, with collectivistic cultures such as China and Japan tending toward stiffer requirements than the more individualistic cultures of the West (Bornstein, 2006; Laible, 2004; Shweder et al., 2006).
4. Fourth and finally, emotional self-regulation in toddlerhood is promoted by the development of the *sociomoral emotions* (Thompson & Goodvin, 2007). Becoming capable of guilt, shame, and embarrassment motivates toddlers to avoid these unpleasant emotional states. Because they may be admonished by others for expressing primary emotions too strongly (e.g., yelling angrily in a grocery store) or in the wrong context (e.g., laughing loudly in a quiet restaurant), they learn emotional self-regulation as part of an effort to win approval from others and avoid their disapproval.

If emotional self-regulation increases from infancy to toddlerhood, why is it toddlerhood that is associated with tantrums—and why is age 2 popularly known in some cultures as the "terrible twos"? Perhaps it is that for toddlers, abilities for emotional self-regulation increase but so do expectations for emotional control. Consequently, when they have the brief but intense outburst of anger, crying, and distress that constitutes a tantrum it is more noticed than the more frequent outbursts of infants (Calkins, 2007). Perhaps it is also that toddlers have a more developed sense of self, including the ability to protest with a tantrum when they don't get their way (Grolnick et al., 2006).

Watch the **Video** Emotional Regulation in Early Childhood at **MyDevelopmentLab**

There must also be a cultural explanation involved. It is interesting to observe that in Western countries, such as the United States and the United Kingdom, it is widely accepted that toddlerhood tantrums are normal and even inevitable (Potegal & Davidson, 2003). One popular American advice book for parents of toddlers asserts that "Tantrums are a fact of toddler life, a behavior that's virtually universal . . . turning little cherubs into little monsters" (Murkoff et al., 2003, p. 336). Yet outside the West, toddler tantrums are rarely mentioned, and toddlerhood is not seen as an age of "terrible" behavior. In African and Asian cultures, by the time toddlerhood is reached, children have already learned that they are expected to control their emotions and their behavior, and they exercise the control required of them (Holodynski, 2009; Miller & Fung, 2010). It may be that tantrums and the allegedly terrible twos are not inevitable at all, but a consequence of Western cultural beliefs in the value of self-expression, which children have already learned well by toddlerhood.

APPLYING YOUR KNOWLEDGE . . . *as a Teacher*

You notice that some children in your pre-school classroom don't show much emotion and are able to control their behavior better than other children. Might there be a cultural explanation for this variation?

LEARNING THE SOCIOMORAL EMOTIONS As described in Chapter 4, infants across cultures display a range of recognizable *primary emotions* from early in life, including anger, fear, and happiness. In toddlerhood new emotions appear, including guilt, shame, embarrassment, envy, and pride. These are known as *secondary emotions* because they develop later than the primary emotions and they are based on what toddlers experience in their social environment (Lewis, 2000). All toddlers have a capacity for developing secondary emotions, as indicated by the fact these emotions appear across a wide range of cultures and are accompanied by characteristic body postures such as, for shame, lowering their eyes, bowing their heads, or covering their faces with their hands (Barrett & Nelson-Goens,

Toddlers beome capable of sociomoral emotions such as shame.

1997). However, what evokes the secondary emotions depends on what toddlers have been taught in their social and cultural environment.

The secondary emotions are called **sociomoral emotions** because they are evoked based on what the toddler has learned about culturally based standards of right and wrong (Mascolo & Fischer, 2007). When toddlers experience guilt, shame, or embarrassment, it is not just because they have made the cognitive comparison between what they have done and what others have expected of them. It is also because they have begun to learn to feel good when they conform to the expected standard and bad when they do not. Thus by age 2 most toddlers have begun to develop a conscience, an internalized set of moral standards that guides their behavior and emotions (Kochanska, 2002; Thompson, 2006).

Another important sociomoral emotion that first develops in toddlerhood is **empathy**, the ability to understand and respond helpfully to another person's distress. Even neonates have an early form of empathy, as indicated by crying when they hear the cry of another infant. Throughout the first year, infants respond to the distress of others with distress of their own. However, true empathy requires an understanding of the self as separate from others, so it develops along with self-awareness in toddlerhood (Gopnik et al., 1999). It is only in the second and especially the third year that toddlers have enough of a developed self to understand the distress of others and respond, not by becoming distressed themselves but by helping other persons relieve their distress (Brownell et al., 2009). In one study, toddlers responded to a researcher's feigned distress by offering a hug, a comforting remark, or a favorite stuffed animal or blanket (Hoffman, 2000). This demonstrates the beginning of **prosocial behavior**, which is behavior intended to help or benefit others (Svetlova et al., 2010).

Although the triggers of the sociomoral emotions are learned from the social environment, there are probably some that are universal. Children everywhere seem to be taught not to hurt the people around them and not to damage or destroy things (Rogoff, 2003). However, even in toddlerhood there are cultural differences in how the sociomoral emotions are shaped. Cultural differences are especially sharp regarding the emotions of pride and shame, that is, in how good a person should feel about individual accomplishments and how quickly, easily, and often shame should be evoked. In Western countries, especially in the United States, pride is often viewed positively (Bellah et al., 1985; Twenge, 2006). Children are praised and encouraged to feel good about themselves for accomplishments such as hitting a ball, dancing in a show, or learning something new. Everybody on the soccer team gets a trophy, win or lose. Shame, in contrast, is applied with hesitation, as parents and others worry that shame may harm the development of children's self-esteem.

In most non-Western cultures, however, pride is seen as a greater danger than shame. In Japanese and Chinese cultures, for example, children are taught from early on not to call attention to themselves and not to display pride in response to personal success (Akimoto & Sanbonmatsu, 1999). For example, in one study of mothers' and 2½ year-olds' conversations about misbehavior in China and the United States, American mothers tended to frame the misbehavior as an emotionally positive learning experience—"Now you know not to do that next time, don't you?"—in order to preserve their toddlers' self-esteem. In contrast, Chinese mothers cultivated shame in their toddlers by emphasizing the negative consequences and negative feelings that resulted from the misbehavior (Miller et al., 1997). To the Chinese mothers, teaching their toddlers shame was a way of teaching them to be considerate of others, and a way of preparing them to grow up in a collectivistic culture that emphasizes the value of consideration for others.

Learning the sociomoral emotions is an important part of becoming a member of a culture. To function in a culture it is necessary to know the rules and expectations for behavior

APPLYING YOUR KNOWLEDGE

How do the changes in toddlers' cognitive development described earlier in the chapter provide the basis for the development of the sociomoral emotions?

sociomoral emotions emotions evoked based on learned culturally based standards of right and wrong; also called *secondary emotions*

empathy ability to understand and respond helpfully to another person's distress

prosocial behavior positive behavior toward others, including kindness, friendliness, and sharing

and to avoid violating them; the sociomoral emotions are experienced as unpleasant, so children and adults alike generally conform to cultural expectations in order to avoid the sociomoral emotions. However, according to Erik Erikson's theory (1950), it is important for parents not to press the sociomoral emotions so hard as to thwart the toddler's budding sense of selfhood. In Erikson's life-span theory (see Chapter 1), toddlerhood is the stage of **autonomy versus shame and doubt**. Toddlers are just gaining a sense of themselves as individuals and learning that they can make choices and decisions and express them to others—which is why "No!" is a popular word during this life stage. When parents allow toddlers to exercise autonomy with reasonable limits, for example by allowing them to do something like spoon some food onto their plate when you could do it for them a lot quicker (and more neatly), toddlers gain a healthy confidence in their abilities to handle life's challenges. However, if parents are harsh and impatient with toddler's attempts to begin to do some things for themselves, toddlers may experience shame and doubt that will undermine their trust in themselves when they are faced with new tasks and new relationships.

autonomy vs. shame and doubt in Erikson's lifespan theory, the main crisis of the toddlerhood stage, when toddlers gain a healthy confidence in their ability to make choices and express them to others *or* parents are harsh and impatient and toddlers experience shame and doubt that undermines their trust in themselves

self-recognition ability to recognize one's image in the mirror as one's self

self-reflection capacity to think about one's self as one would think about other persons and objects

The Birth of the Self

Describe the changes in self-development that take place during toddlerhood.

LEARNING OBJECTIVE 5.13

Even in the early weeks of life there is evidence that infants have the beginnings of a sense of self, a sense of being distinct from the external environment. Many of the topics introduced in Chapter 4 on infancy can be interpreted as reflecting the beginnings of self-awareness. Infants recognize the smell of their mother's breast and the sound of her voice after just a few days of life, indicating an awareness of a difference between their own smells and sounds and those of others. In the first month they display a stronger rooting reflex in response to another person touching their cheek than in response to their own hand performing the same movement (Rochat & Hespos, 1997). After a month or two they begin responding in interactions with others by smiling, moving, and vocalizing, thus showing an awareness of themselves and others as distinct social partners. By the middle of the first year they recognize and respond to their own name when it is spoken by others, indicating the beginning of a name-based identity. By the end of the first year, they search for hidden objects and examine objects and put them in their mouths, all behaviors showing an awareness of the distinction between themselves and the external world (Harter, 2006; Thompson, 2006).

Although self-awareness begins to develop during infancy, it advances in important ways during toddlerhood. It is during the second and third years of life that children first demonstrate **self-recognition**. This was demonstrated in a classic experiment in which toddlers were secretly dabbed on the nose with a red spot, then placed in front of a mirror (Lewis & Brooks-Gunn, 1979). Upon seeing the child with the red nose in the mirror, 9- and 12-month-old infants would reach out to touch their reflection as if it were someone else, but by 18 months most toddlers rubbed their own nose, recognizing the image as themselves.

About the same time self-recognition first appears (as indicated in the red-nose test) toddlers also begin to use personal pronouns for the first time ("I," "me," "mine"), and they begin to refer to themselves by their own names (Lewis & Ramsay, 2004; Pipp et al., 1987). These developments show that by the second half of their second year toddlers have the beginnings of **self-reflection**, the capacity to think about themselves as they would think about other persons and objects. Self-reflection enables toddlers to develop the sociomoral emotions described earlier. As toddlers become more self-aware, they learn that the people in their cultural environment have expectations for how to behave and they learn to feel negative emotions when they do something defined as bad or wrong.

THINKING CULTURALLY

How does the birth of the self in toddlerhood help explain toddlers' responses to weaning in traditional cultures, as described earlier in the chapter?

Watch the **Video** Self Awareness Task at **MyDevelopmentLab**

Gender Identity and the Biology of Gender Development

5.14 LEARNING OBJECTIVE

Distinguish between *sex* and *gender* and summarize the evidence for the biological basis of gender development.

gender identity awareness of one's self as male or female

sex biological status of being male or female

gender cultural categories of "male" and "female"

Explore the Concept Different Gender Stereotypes at **MyDevelopmentLab**

Watch the Video Gender Versus Sex at **MyDevelopmentLab**

Watch the Video Understanding Self and Others at **MyDevelopmentLab**

Gender socialization begins early in all cultures.

Another aspect of self-development that begins in toddlerhood is the formation of a **gender identity**. Between 18 and 30 months of age is when children first identify themselves and others as male or female (Martin et al., 2002). At age 2 they can also apply gender terms like *boy* and *girl*, *woman* and *man* to others (Campbell et al., 2004; Raag, 2003).

Before proceeding further, let's clarify the difference between *sex* and *gender*. In general, social scientists use the term **sex** to refer to the biological status of being male or female. **Gender**, in contrast, refers to the cultural categories of "male" and "female" (Tobach, 2004). Use of the term *sex* implies that the characteristics of males and females have a biological basis. Use of the term *gender* implies that characteristics of males and females may be due to cultural and social beliefs, influences, and perceptions. For example, the fact that males are somewhat larger than females throughout life is a sex difference. However, the fact that girls in many cultures have longer hair than boys is a gender difference. The distinction between a sex difference and a gender difference is not always as clear as in these examples, as we will see in this and other chapters. The degree to which differences between males and females are biological or cultural is a subject of great importance and heated debate in the social sciences.

Even before toddlerhood, in all cultures people communicate gender expectations to boys and girls by dressing them differently, talking to them differently, and playing with them differently (Hatfield & Rapson, 2006). In a classic experimental study (Sidorowicz & Lunney, 1980), adults were asked to play with a 10-month-old infant they did not know. All adults played with the same infant, but some were told it was a girl, some were told it was a boy, and some were given no information about its sex. There were three toys to play with: a rubber football, a doll, and a teething ring. When the adults thought the child was male, 50% of the men and 80% of the women played with the child using the football. When they thought the child was female, 89% of the men and 73% of the women used the doll in play.

In the early years, it is mainly parents who are the deliverers of cultural gender messages (Ruble et al., 2006; Whiting & Edwards, 1988). They give their children names, and usually the names are distinctively male or female. They dress boys differently from girls and provide them with different toys to play with (Bandura & Bussey, 2004). Toys are gender-specific custom complexes, representing distinctive cultural patterns of behavior that are based on underlying cultural beliefs (see Chapter 4). Toys for boys—such as guns, cars, and balls for playing sports—reflect the expectation that boys will be active, aggressive, and competitive. Toys for girls—such as dolls, jewelry, and playhouses—reflect the expectation that girls will be nurturing, cooperative, and attractive in appearance. Children readily learn cultural messages about gender roles in toddlerhood, and by early childhood they help enforce these roles with other children. However, gender development has a biological basis as well; *sex* and *gender* are intertwined. Let's look at the biological basis of gender development here, and then explore gender socialization in depth in Chapter 6.

GENDER AND BIOLOGY The cultural and social basis of gender development is well-substantiated. However, there is also a biological basis to gender development. To put this in terms of the distinction between sex and gender just described, sex differences sometimes underly gender differences—but not always, as we shall see. There are three elements to the biological basis of gender development: evolutionary, ethological, and hormonal.

In the evolutionary view, males and females develop differently because over the course of many millennia of human evolution, different characteristics

promoted survival for the two sexes (Buss, 2004; Jackson, 2004). For males, survival was promoted by aggressiveness, competitiveness, and dominance. Males with these characteristics were more likely than their peers to outfight other males for scarce resources and more likely to gain sexual access to females. Consequently, they were more likely to reproduce, and through the process of natural selection, gradually these characteristics became a standard part of being a male human being. The aggressiveness and competitiveness of boys in early childhood is an outcome of a long evolutionary history.

For human females, in contrast, over the course of many millennia of evolution, survival was promoted by being nurturing, cooperative, and emotionally responsive to others. Females with these characteristics were more likely than their peers to attract males who would protect them and provide for them. They needed males to protect them from other males, because they would frequently be pregnant or caring for young children. Females with these qualities were also more likely to be effective at caring for children through the long period of vulnerability and dependency that is characteristic of the young of the human species. Consequently, their offspring were more likely to survive to reproductive age, and through natural selection, gradually these qualities became genetically, biologically based tendencies of the human female. The cooperativeness and emotional responsiveness of girls in early childhood, and their interest in playing house and playing with dolls, is an outcome of a long evolutionary history.

Ethology, the study of animal behavior, also provides evidence of the biological basis of human gender differences. The gender differences that exist among humans are also true of our closest primate and mammalian relatives (Diamond, 1992; Pinker, 2004). Like human males, the males in those species closely related to us are also more aggressive, competitive, and dominant than females; and males who are highest in these qualities gain greater sexual access to females. Like human females, females in closely related species also are more nurturing and cooperative than males are, and they have primary responsibility for caring for young children. Like human children, the young of closely related species also play in same-sex groups. The similarity of sex-specific behavior across related species is strong evidence for a biological basis for human gender differences.

Hormonal evidence also supports the biological basis of human gender differences. Throughout life, beginning even prenatally, males and females differ in their hormonal balances, with males having more androgens and females more estrogens. In fact, males must receive a burst of androgens in their third month of prenatal development in order to develop into males. These hormonal differences influence human development and behavior. The strongest evidence for this is in studies of children who have hormonal abnormalities. Girls who were exposed to high levels of androgens in the womb are more likely than their peers to show male play behavior in early childhood, including playing with "male" toys like trucks and a preference for male playmates (Hines, 2004). Boys who were exposed to high levels of estrogens in the womb are more likely than their peers to show female play behavior in early childhood, including playing with "female" toys like dolls and a preference for female playmates (Knickmeyer & Baron-Cohen, 2006). In animal studies, too, females whose levels of prenatal androgen are increased experimentally show increased aggression and more active play than their animal peers, and less interest in caring for their offspring (Maccoby, 2002).

THE LIMITS OF BIOLOGY Taken together, the evidence from evolutionary theory, ethological research, and research on hormonal abnormalities makes a strong case for the biological basis of human gender differences. There is little doubt that gender differences are accentuated and reinforced by the socialization environment, in every culture. At the same time, there is little doubt that human males and females are biologically different and that these differences are evident in their development in toddlerhood and beyond, in all cultures.

However, there is good reason to be skeptical and wary of attributing all human gender differences mainly to biology. In the course of human history, especially in the last century, gender roles have changed dramatically, even though biologically we have not changed (Brumberg, 1997). It is only 100 years ago that women were excluded from higher education

APPLYING YOUR KNOWLEDGE

How is the case of children with hormonal abnormalities an example of a natural experiment? Are there any limitations to its validity as a natural experiment?

ethology study of animal behavior

and from virtually all professions. It was widely believed, even among scientists—who were all male—that women were biologically incapable of strenuous intellectual work.

Today, in an era when women exceed men in university participation in most countries in the world and are close to or equal to men in their representation in medicine, law, business, and other fields, these beliefs seem preposterous. Yet just a century ago, the most knowledgeable people of the time were certain these beliefs were true. That fact should give us pause before we assert that the biological basis of children's gender differences today is indisputable. The changes in women's roles over the past century demonstrate the enormous influence that culture can have on the raw material of biology in human development. As cultures change, gender roles can change, even though the underlying biology of human development remains the same.

The other issue worth mentioning here is that when we speak of gender differences, we are comparing one-half of the human species to the other, over 3 billion persons to the other 3 billion-plus persons. There is a tendency among social scientists to describe gender differences by stating that "boys are X, whereas girls are Y" (including in the section you just read). However, these generalizations almost always overstate the differences between the two genders. Even where there are legitimate gender differences, in early childhood and beyond, there are also many exceptions. To put it another way, the variability within each gender is usually much greater than the differences between the two genders, for most characteristics. Consequently, we should be careful not to let our perceptions of gender differences prejudge our estimations of the qualities or abilities of individual boys or girls or men or women.

Explore the **Concept** Adults' Perceptions of Boys and Girls at **MyDevelopmentLab**

Study and **Review** at **MyDevelopmentLab**

WHAT HAVE YOU LEARNED?

1. What are four ways that emotional regulation develops during toddlerhood?
2. Why is age 2 described as the "terrible twos" in some cultures but not in others?
3. Why are secondary emotions also called "sociomoral emotions"?
4. What is the red-nose test and how does it demonstrate self-recognition?
5. What is gender identity and when does it first develop?
6. Describe some ways that parents communicate gender-role socialization to infants and toddlers.

One Special Person: Attachment Theory and Research

From infancy to toddlerhood, the social world expands. However, crucial to social development remains the relationship with one special person, usually but not always the mother, who provides love and care reliably. In the field of human development the study of this relationship in infancy and toddlerhood has focused on attachment theory and research based on this theory.

Attachment Theory

5.15 LEARNING OBJECTIVE

Describe the essential features of attachment theory and identify the four classifications of attachment.

Because the long dependency of children on adults is such a distinctive characteristic of our species, the question of how the attachments between human children and adults develop has long been of great interest to human development scholars. Attachment theory

was first introduced in our discussion of infant social development (see Chapter 4). Here we examine the features of attachment theory in more detail, including ways of evaluating the quality of parent–child attachment and critiques of attachment theory.

John Bowlby, originator of attachment theory. (Photo by Jürgen Schadeberg)

BOWLBY'S THEORY Through most of the 20th century there was strong consensus that human infants become attached to their mothers because mothers provide them with food. Hunger is a distressing physical state, especially for babies, who are growing rapidly and need to be fed often. Mothers relieve this distressing state and provide the pleasure of feeding. Over time, infants come to associate the mother with the relief of distress and the experience of pleasure. This association becomes the basis for the love that infants feel for their mothers. This was the dominant view in psychology in the first half of the 20th century. However, around the middle of the 20th century, the British scholar John Bowlby (1969) began to observe that many research findings that were appearing at the time were inconsistent with this consensus.

There were three findings that were especially notable to Bowlby. First, French psychiatrist René Spitz (1946) reported that infants raised in institutions suffered in their physical and emotional development, even if they were fed well. Spitz studied infants who entered an orphanage when they were 3 to 12 months old. Despite adequate physical care, the babies lost weight and seemed listless and passive, a condition Spitz called *anaclitic depression*. Spitz attributed the infants' condition to the fact that one nurse had to care for seven infants and spent little time with each except for feeding them and changing their diapers. (Anaclitic means "leaning upon," and Spitz chose this term because the infants had no one to lean upon.) The infants showed no sign of developing positive feelings toward the nurse, even though the nurse provided them with nourishment. Other studies of institutionalized infants reported similar results (Rutter, 1996).

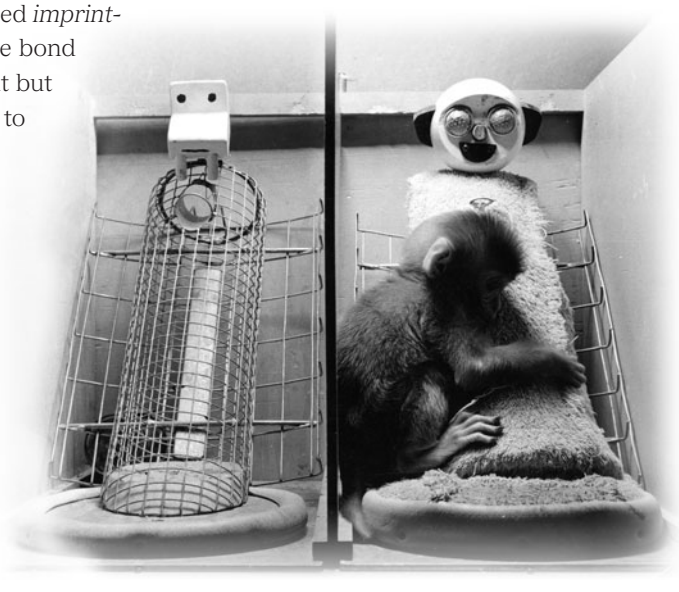
Watch the **Video** Institution Care/Adoption and Foster Care: Nathan Fox at **MyDevelopmentLab**

The second set of findings that called feeding into question as the basis of the infant–mother bond involved primates, specifically rhesus monkeys. In a classic study, Harry Harlow (1958) placed baby monkeys in a cage with two kinds of artificial "mothers." One of the mothers was made of wire mesh, the other of soft terry cloth. Harlow found that even when he placed the feeding bottle in the wire mother, the baby monkeys spent almost all their time on the cloth mother, going to the wire mother only to feed. Again, a simple link between feeding and emotional bonds seemed called into question.

primary attachment figure person who is sought out when a child experiences some kind of distress or threat in the environment

The third set of findings noted by Bowlby proved the most important for his thinking. These findings came from the field of *ethology*, which, as we have noted, is the study of animal behavior. Ethologists reported that for some animals, the bond between newborns and their mothers was instantaneous and occurred immediately after birth. Konrad Lorenz (1965), a German ethologist, showed that newborn goslings would bond to the first moving object they saw after hatching and follow it closely, a phenomenon he called *imprinting* (see Chapter 3). To Lorenz and other ethologists, the foundation of the bond between the young of the species and their mothers was not nourishment but protection. Imprinting to the mother would cause the young to stay close to her and thereby be protected from harm.

Harlow's studies showed that attachments were not based on nourishment. As shown here, the monkeys preferred the cloth "mother" even though the wire "mother" provided nourishment.



Considering these three sets of findings, Bowlby concluded that the emotional tie between infants and their mothers was based on children's need for protection and care for many years. Thus as Bowlby described it, the *attachment* that develops between children and caring adults is an emotional bond that promotes the protection and survival of children during the years they are most vulnerable. The child's **primary attachment figure** is the person who is sought out when the child experiences some kind of distress or threat in the environment, such as hunger, pain, an unfamiliar person, or an unfamiliar setting. Usually the primary attachment figure is a parent, and is most often the mother because in nearly all cultures mothers are primarily the ones who are most involved in the care of infants. However, the primary attachment figure could also

APPLYING YOUR KNOWLEDGE . . . as a Researcher

You are sent to a local Polynesian village to do the "red nose" test with some toddlers aged 12-20 months (refer back to p. 203). The instructions call for the mother to sit near the mirror. However, the toddlers seem to want an older sibling to sit nearby rather than their mothers. Is it ok to change the protocol to include the older sibling instead of the mother?

Watch the **Video** Stranger Anxiety at **MyDevelopmentLab**

be the father, a grandparent, an older sister, or anyone else who is most involved in the infant's care. Separation from the primary attachment figure is experienced by the child as especially threatening, and the loss of the primary attachment figure is a catastrophe for children's development (Bowlby, 1980).

Although infants can discriminate among the smells and voices of different people in their environment from early on, in their first months they can be held and cared for by a wide range of people, familiar as well as unfamiliar, without protesting. However, by about the middle of the first year of life, this begins to change. Gradually they become more selective, developing stronger preferences for familiar others who have cared for them, and **stranger anxiety** emerges in response to being approached, held, or even smiled at by people they do not recognize and trust. Stranger anxiety exists in a wide range of cultures beginning at about age 6 months and grows stronger in the months that follow, as **Figure 5.5** illustrates (Super & Harkness, 1976). So, if an infant or toddler turns away, frowns, or bursts into tears in response to your friendly overtures, don't take it personally!

There is an evolutionary basis for the development of stranger anxiety at about age 6 months (Bowlby, 1967). This is the age when infants first become mobile, and learning to crawl allows them to begin to explore the environment but also carries the risk that they may crawl themselves into big trouble. Learning to stay close to familiar persons and avoid unfamiliar persons helps infants stay near those who will protect them and keep them safe.

Although it promotes survival for children to stay close to caring adults, it also promotes survival for children to learn about the world around them. Consequently, under normal conditions young children use their primary attachment figure as a **secure base** from which to explore the surrounding environment (Bowlby, 1969). If a threat appears in the environment, attachment behavior is activated and children seek direct physical contact with their attachment figure.

According to Bowlby, attachment develops gradually over the first 2 years of life, culminating in a *goal-corrected partnership* in which both persons use language to communicate about the child's needs and the primary attachment figure's responses. Over time, the child becomes steadily less dependent on the care and protection of the primary attachment figure. However, even into adulthood, the child may seek out the primary caregiver for comfort during times of crisis.

VARIETIES OF ATTACHMENT: THE STRANGE SITUATION Bowlby was a theorist, not a researcher, and he did not conduct studies to test his theory directly. Research on attachment was pioneered by Mary Ainsworth, a colleague of Bowlby (Ainsworth & Bell, 1969; Ainsworth et al., 1978). Ainsworth followed Bowlby's theory in viewing the child's attachment as being most evident in the response to separation from the primary attachment figure. She had observed that along with stranger anxiety, infants and toddlers experience **separation anxiety** when apart from attachment figures, especially if a stranger is present. To evoke children's

stranger anxiety fear in response to unfamiliar persons, usually evident in infants by age 6 months

secure base role of primary attachment figure, allows child to explore world while seeking comfort when threats arise

separation anxiety discomfort experienced by infants and young children when apart from attachment figures, especially when a stranger is present

Strange Situation laboratory assessment of attachment entailing a series of introductions, separations, and reunions involving the child, the mother, and an unfamiliar person

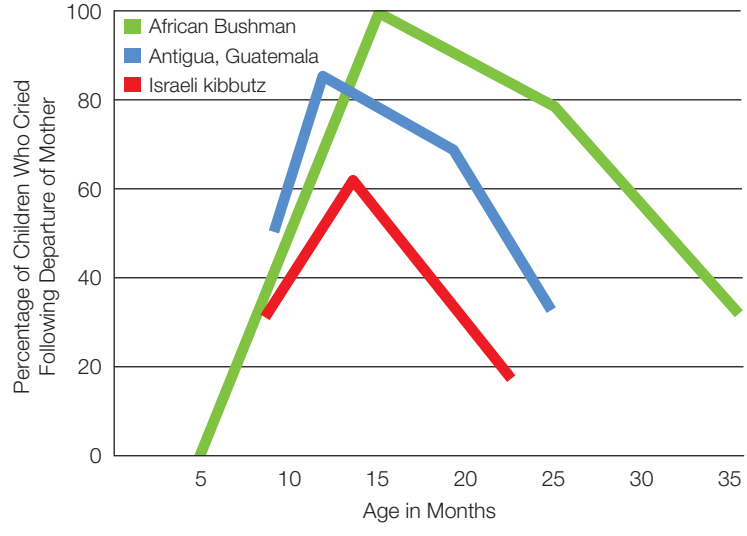


Figure 5.5 • **The Rise and Fall of Stranger Anxiety in the First 3 Years Across Cultures** Stranger anxiety peaks around the end of the first year.
Source: Kagan et al., 1978

attachment behavior, Ainsworth devised a laboratory procedure she called the **Strange Situation** (Ainsworth et al., 1978). The Strange Situation is a series of introductions, separations, and reunions involving the child, the mother, and an unfamiliar person (see **Figure 5.6**). It was devised for toddlers, ages 12 to 24 months, because this is an age that is old enough so that attachment has developed to a point where it can be assessed.

In the Strange Situation the mother and toddler first come into the laboratory room and are left for a few minutes to become used to it. There are toys and the toddler may begin to play with them. A series of episodes follows in which a "stranger" enters the room, the mother leaves the room, the mother returns, the mother leaves again, and the mother returns again. When she returns the second time, the mother is supposed to pick the child up.

On the basis of toddlers' responses to the Strange Situation, four classifications of attachment were developed (Ainsworth et al., 1978; Ammaniti et al., 2005). The first three were proposed by Ainsworth, and the fourth was added by later researchers.

Secure attachment. Toddlers in this category use the mother as a secure base from which to explore, in the first part of the Strange Situation when only the mother and toddler are present. Upon separation, securely attached toddlers usually cry or vocalize in protest. When the mother returns, they greet her happily by smiling and perhaps going to her to be hugged and held.

Insecure–avoidant attachment. These toddlers show little or no interaction with the mother when she is present, and no response to the mother's departure or return. When these toddlers are picked up in the last episode of the Strange Situation, they may immediately seek to get down.

Insecure–resistant attachment. Toddlers classified as insecure–resistant are less likely than others to explore the toys when the mother is present, and they show greater distress when she leaves the room. When she returns, they show ambivalence, running to greet the mother in seeming relief but then pushing her away when she attempts to comfort or pick them up.

Disorganized–disoriented attachment. Toddlers in this category show extremely unusual behavior in response to the Strange Situation (Ammaniti et al., 2005; van IJzendoorn et al., 1999). They may seem dazed and detached when the mother leaves the room, but with outbursts of anger, and when the mother returns they may seem fearful. Some freeze their movements suddenly in odd postures. This kind of attachment is especially shown by toddlers who show other signs of serious problems, such as autism or Down syndrome. Their mothers are more likely to have used alcohol or drugs during pregnancy and are more likely to have had psychological problems.

Although attachment classification is based on behavior throughout the Strange Situation, Ainsworth viewed the toddler's reunion behavior as the best indicator of the quality of attachment (Ainsworth et al., 1978). Toddlers with secure attachments seemed delighted to see their mothers again after a separation and often sought physical contact with her, whereas toddlers with insecure attachments either responded little to her return (avoidant) or seemed both relieved and angry at her (resistant).

Figure 5.6 • **The Strange Situation** The Strange Situation features a series of episodes in which (a) the mother leaves the room, (b) the toddler is alone with the stranger, and (c) the mother returns to the room and is reunited with the toddler.

secure attachment healthiest classification of parent–child attachment, in which the child uses the parent as a secure base from which to explore, protests when separated from parent, and is happy when the parent returns

insecure–avoidant attachment classification of parent–child attachment in which there is relatively little interaction between them and the child shows little response to the parent's absence and may resist being picked up when the parent returns

insecure–resistant attachment classification of parent–child attachment in which the child shows little exploratory behavior when the parent is present, great distress when the parent leaves the room, and ambivalence upon the parent's return

disorganized–disoriented attachment classification of parent–child attachment in which the child seems dazed and detached, with possible outbursts of anger, when the parent leaves the room, and exhibits fear upon parent's return

Quality of Attachment

LEARNING OBJECTIVE 5.16

Identify the key factors influencing the quality of toddlers' attachment to their mothers, and explain what effect attachment quality has on development.

Simulate the **Experiment** Attachment Classifications in the Strange Situation at **MyDevelopmentLab**

If toddlers differ in the quality of their attachments, what determines those differences? And what implications does attachment quality in toddlerhood have for later development?

Attachment behavior is especially activated if the toddler is distressed.

APPLYING YOUR KNOWLEDGE

What are the implications of attachment theory for the debate discussed in Chapter 4 over whether or not a crying baby should be comforted?

DETERMINANTS OF ATTACHMENT QUALITY Ainsworth's early research indicated that about two-thirds of toddlers had secure attachments to their mothers, with the remaining one-third either insecure–avoidant or insecure–resistant (Ainsworth et al., 1978). Many other studies of American and European children since then have found similar results (NICHD Early Child Care Research Network, 2006; van IJzendoorn & Sagi, 2010). Disorganized–disoriented attachment is rare.

But what determines the quality of toddlers' attachments to their mothers? In her early research, Ainsworth and her colleagues observed families in their homes, including the same mother–child pairs they later observed in the laboratory in the Strange Situation (Ainsworth, 1977). The home observations were extensive: every 3 weeks for four hours, from when the children were 3 weeks old to just past their first birthdays.

When considering the mother–child interactions in the home in relation to their behavior as observed in the Strange Situation, Ainsworth concluded that the quality of attachment was based mainly on how sensitive and responsive the mother was. To be *sensitive* means to be good at judging what the child needs at any given time. For example, sensitive mothers could tell when their children had had enough to eat, whereas others seemed to stop feeding while the children were still hungry or tried to keep feeding them after they seemed full. To be *responsive* means to be quick to assist or soothe the children when they need it. For example, responsive mothers would hug or pick up or talk soothingly when their children were distressed, whereas others would let them cry for awhile before going to their assistance.

According to attachment theory, based on the degree of their mothers' sensitive and responsive behavior over the first year of life, children develop an *internal working model* of what to expect about her availability and supportiveness during times of need (Bowlby, 1969, 1980; Bretherton & Mulholland, 1999). Children with secure attachments have developed an internal working model of the mother as someone they can rely upon to provide help and protection. Children with insecure attachments are unsure that the mother will come through when they need her. They have an internal working model of her as someone who is unpredictable and cannot always be trusted. One reason the Strange Situation is first assessed in toddlerhood rather than infancy is that it is only by toddlerhood that children are cognitively mature enough to have developed an internal working model of their primary attachment figure (Ainsworth et al., 1978; Bowlby, 1969).

ATTACHMENT QUALITY AND LATER DEVELOPMENT According to Bowlby (1969), the internal working model of the primary caregiver formed in infancy and toddlerhood is later applied to other relationships. Consequently, the attachment to the primary caregiver established in the first 2 years shapes expectations and interactions in relationships with others throughout life, from friends to teachers to romantic partners to one's own future children. Securely attached children are able to love and trust others because they could love and trust their primary caregiver in their early years. Insecurely attached children display hostility, indifference, or overdependence on others in later relationships, because they find it difficult to believe others will be worthy of their love and trust (Thompson, 1998).

This is a bold and intriguing claim. How well does it hold up in research? A number of longitudinal studies on attachment have by now followed samples from toddlerhood through adolescence or emerging adulthood, and they provide mixed support for the predictions of attachment theory. Some longitudinal studies show a relationship between attachment quality assessed in toddlerhood and later emotional and social development, but other studies do not (Egeland & Carlson, 2004). The current view is that attachment quality in infancy and toddlerhood establishes tendencies and expectations that may then be modified by later experiences in childhood, adolescence, and beyond (McCarthy & Maughan, 2010; Thompson, 2008). To put this in terms of the theory, the internal working model established early may be modified substantially by later experiences.

Only disorganized–disoriented attachment is highly predictive of later problems (Ammaniti et al., 2005; van IJzendoorn et al., 1999; Vondra & Barnett, 1999). Toddlers

with this attachment classification exhibit high hostility and aggression in early and middle childhood, and are likely to have cognitive problems as well (Weinfield et al., 2004). In adolescence and beyond, toddlers who had been classified as disorganized–disoriented are at higher risk for behavior problems and psychopathology (van IJzendoorn et al., 1999). However, this type of attachment is believed to be due to underlying problems in neurological development, not to the behavior of the primary caregiver (Barnett et al., 1999; Macfie et al., 2001). Since Ainsworth's classic studies, researchers have also investigated toddlers' attachments to fathers and other nonmaternal caregivers. We examine one such study in the **Research Focus: Early Child Care and Its Consequences** feature.

Watch the **Video** Lisa: Adjusting to Day Care: Part 1 at **MyDevelopmentLab**

RESEARCH FOCUS Early Child Care and Its Consequences

One of the most striking changes of the last half century in Western countries is that mothers of young children now generally work outside the home (see **Map 5.2** on page 212). For example, in 1960 only 17% of American mothers of children under a year old were employed, but by the year 2000 this proportion had risen to over 60% (Smith et al., 2001). Similar changes took place in other Western countries (Scheiwe & Willekins, 2009). Because this change has happened so quickly and so recently, and because mothers have never before been employed in such large numbers, there has been a great deal of concern expressed about the potential consequence of this change for young children's development. Consequently, a great deal of research has been undertaken to explore this issue.

Beginning in the 1990s, the largest and most comprehensive study of early child care and its consequences was conducted in the United States, sponsored by the National Institute of Child Health and Human Development (NICHD). The "NICHD Study of Early Child Care" began in 1991 with over 1,300 young children (from infancy through early childhood) at 10 sites around the United States. The children and their families were followed longitudinally for 7 years (NICHD Early Child Care Research Network, 2005). The sample was diverse in socioeconomic (SES) background, ethnicity, and geographical region. Multiple methods were used to assess the children and their families, including observations, interviews, questionnaires, and standardized tests. Multiple aspects of the care children received were also assessed, including quantity, stability, quality, and type of care. A wide range of children's developmental domains were examined, including physical, social, emotional, cognitive, and language development.

Toddlers in high-quality child-care centers are as likely as children in home care to have secure attachments.

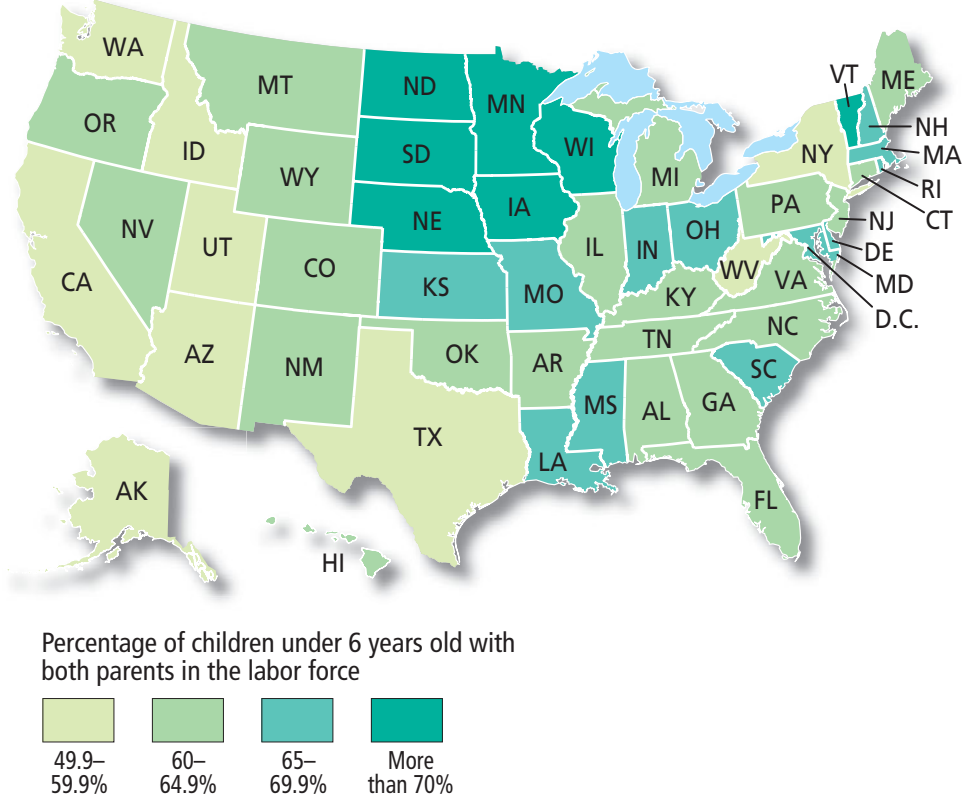
There were many notable and illuminating findings in the study. About three-fourths of the children in the study began nonmaternal child care by the age of 4 months. During infancy and toddlerhood most of this care was provided by relatives, but enrollment in child-care centers increased during toddlerhood, and beyond age 2 most children receiving nonmaternal care were in centers. Infants and toddlers averaged 33 hours a week in nonmaternal care. African American infants and toddlers experienced the highest number of hours per week of nonmaternal care and White infants and toddlers the lowest, with Latinos in between.

The most important variables related to children's development were hours per week in care and quality of care. Quality of care was assessed in three ways: (1) the caregivers' education, training in child care, and child-care experience; (2) the ratio of children to caregivers and the number of children per group; and (3) the interactions between caregivers and children (based on observations of mothers and nonmaternal caregivers). Notably, children from the highest and lowest SES backgrounds received the highest quality care and the children from near-poor backgrounds received the lowest, because the parents of the poorest children qualified for subsidies for high-quality care, whereas the parents of the near-poor children did not.

The results of the study regarding early childhood will be discussed in Chapter 6, but for infants and toddlers, the focus of the study was on how child-care arrangements might be related to attachment (NICHD Early Child Care Research Network, 1997,

2005). The observations measured how *sensitive* and *responsive* caregivers were with the children, the two most important determinants of attachment quality according to attachment theory. As measured by the Strange Situation, attachments to mothers were no different for toddlers receiving nonmaternal care than for toddlers receiving only maternal care. However, insecure attachments were more likely if the nonmaternal care was low in quality, for more than 10 hours per week, or if mothers were low in sensitivity. Maternal sensitivity was especially important. Toddlers whose mothers were relatively high in sensitivity were usually securely attached, even if the quality of nonmaternal care was below average and the number of hours in care was more than 10 per week; in contrast, toddlers whose mothers were relatively low in sensitivity were often insecurely attached even if they received high-quality nonmaternal child care.

This was an impressively ambitious and comprehensive study, but even this study has limitations. Most notably, the children were not randomly assigned into child-care groups. The choices about the care they received and how many hours per week they were in care were made by their parents, not the researchers. Consequently, the outcomes of the children's child-care experiences were interwoven with many other variables, such as parents' income, education, and ethnicity. In statistical analyses it is possible to "control for" these other variables in seeking to determine the consequences of child-care experiences, but not so much as to resemble the more definite results that random assignment into child-care groups would have provided. This is an example of how social scientists are rarely able to create an ideal experimental situation in their research, but must usually take human behavior as they find it and do their best to unravel the daunting complexity of real life.



Map 5.2 • **American Children with Working Parents** Many American children live in households in which both parents are working. Which states have the highest percentage of working parents? How will this influence the need for early child care in these states?

Critiques of Attachment Theory

5.17 LEARNING OBJECTIVE Summarize the major critiques of attachment theory, including the cultural critique.

Attachment theory is undoubtedly one of the most influential theories of human development. It has generated hundreds of studies since Bowlby first articulated it over 40 years ago (Atkinson & Goldberg, 2004; Cassidy & Shaver, 2010; Sroufe et al., 2005). However, it has also generated critiques that have pointed to limitations of the theory.

THE CHILD EFFECT CRITIQUE The "child effect" is one of the most common critiques of attachment theory. It claims the theory overstates the mother's influence and understates the child's influence on quality of attachment, in two related ways. First, it fails to recognize that children are born with different temperaments (see Chapter 4; Bakermans-Kranenburg et al., 2004). If, in the Strange Situation, a toddler is highly anxious when the mother leaves the room, then behaves aggressively by pushing her away when she returns, it could be due to a difficult temperament, not to the mother's failure to be sufficiently sensitive and responsive (Atkinson et al., 1999; van IJzendoorn et al., 2004).

Second, in attachment theory the direction of influence is one-way, from parents to children, but increasingly in recent decades researchers of human development have emphasized that parent–child relations are *reciprocal* or *bidirectional*. Parents influence their children, but children also influence their parents. For example, mothers of toddlers with a disorganized–disoriented attachment classification have been found to behave differently in the Strange Situation than other mothers. They may fail to respond when their toddlers become distressed, and may hold them at arm's length when picking them up, rather than comforting them by holding them close (Lyons-Ruth et al., 1999; van IJzendoorn et al., 1999). These mothers sometimes appear confused, frustrated, or impatient. This could be a failure to be sensitive and responsive, but it is also possible that the mothers are responding to the toddler's behavioral difficulties (Barnett et al., 1999). Most likely is that the mothers and disorganized–disoriented toddlers are influencing each other in a negative bidirectional cycle (Lyons-Ruth et al., 1999; Symons, 2001).

Jerome Kagan (2000), who has conducted decades of influential research on young children, observes that it is highly unlikely that infants and toddlers are as vulnerable and impressionable to parental influence as the attachment theorists suppose. On the contrary, infants and toddlers have evolved to be capable of developing well in response to a wide range of variations in parenting. Parents do not need to be ideally sensitive and responsive in order for their children to grow up to be capable of forming healthy attachments to others.

Although it is now widely acknowledged that child effects contribute to attachment quality, there is evidence from several sources indicating that attachment also depends on parental care. First, toddlers sometimes exhibit different attachments to fathers than to mothers (Shonkoff & Phillips, 2000). If attachment were due mainly to temperament or bidirectional effects, one would expect toddlers' attachments to be consistent across caregivers. Second, attachment quality has been found to be affected by family events such as parental divorce, job loss, or financial problems (Thompson & Raikes, 2003). Again, if attachment were due primarily to child characteristics, one would expect consistency regardless of external events. Finally, behavior genetics studies have found little genetic contribution to attachment (O'Connor & Croft, 2001). If temperament were a major contributor to attachment quality, one would expect attachment quality to be heritable, as temperament is, yet current evidence indicates it is not.

Is early attachment the basis of all future love relationships?

THE CULTURAL CRITIQUE As we have seen, cultures vary widely in the care they provide for infants and toddlers. Overall, in traditional cultures infants and mothers are in close contact throughout the first year of life, and in the second year toddlers spend most of their time being cared for by an older girl, often a sibling, and playing in mixed-age groups. In the West, infants are also cared for mainly by mothers, but they typically have their own bedroom from the beginning and are left on their own for a considerable amount of time, including at night. Autonomy and independence are encouraged from an early age.

To what extent are these differences reflected in attachment relationships? Remember, attachment is supposed to be a universal, species-wide phenomenon. According to Bowlby, it developed in the course of human evolution due to the extended vulnerability

typically cared for by an older sister and also have frequent contact with the mother. However, as we have seen, weaning can be a major event in the lives of toddlers in traditional cultures, and it may have an influence on the security of attachment. In one of Ainsworth's (1977) earliest studies, on mother–child attachments in Uganda, she observed that toddlers in Uganda often changed in attachment after weaning, suddenly showing a sharp increase in insecurity, including "a remarkable increase in their fear of strangers" (p. 143).

In general, the traditional, non-Western norm of maternal care emphasizes interdependence and collectivism to a greater extent than is found in attachment theory (Morelli & Rothbaum, 2007; Rothbaum et al., 2000; Rothbaum & Morelli, 2005). Attachment theorists emphasize that sensitive and responsive maternal care should provide love and care while also encouraging self-expression and independence, but this is not an ideal found in all or even most cultures. For example, Rothbaum and colleagues (2007) describe the Japanese concept of ***amae*** (ah-may-uh), which is a very close, physical, indulgent relationship between the mother and her young child. This is the ideal in Japan, but to some attachment researchers it fits the description of the kind of mothering that promotes insecure–resistant attachment (George & Solomon, 1999). Also, attachment researchers describe how toddlers with secure attachments grow up to be children who are self-reliant, socially assertive, and have high self-esteem, but these traits are not viewed as virtues in all cultures (Rothbaum et al., 2000).

Overall, attachment theory has held up quite well in the decades since Bowlby first proposed it. However, at this point relatively few studies have been conducted outside Western cultures, so there is more to be learned about the forms attachments may take in different cultures (Morelli & Rothbaum, 2007).

APPLYING YOUR KNOWLEDGE . . . as a *Day-Care Provider*

Katal is a Mayan toddler who has just relocated from Mexico with her parents. Her only other caregivers, her grandparents, stayed behind. You notice Katal is not easily soothed when her parents leave, and when they return, she rushes to them but then seems to shun their attempts to comfort her. Would you classify Katal as an insecure-resistant child?

APPLYING YOUR KNOWLEDGE

Given the long period of immaturity that the young of the human species have, is attachment necessarily universal? Would it be possible for a child to grow to maturity without forming attachments of some kind?

WHAT HAVE YOU LEARNED?

1. What research findings led to Bowlby's development of attachment theory?
2. How does attachment develop in the first 2 years of life?
3. How did Mary Ainsworth research attachment theory?
4. What have studies on the consequences of early child care found? What are the limitations of such studies?
5. To what extent do longitudinal studies of attachment support Bowlby's theory?
6. Is attachment universal? What cultural variations have been found?

Study and **Review** at **MyDevelopmentLab**

amae Japanese word for very close, physical, indulgent relationship between the mother and her young child

The Social World of the Toddler

In toddlerhood as in infancy, the social world includes ties to family, especially mothers and fathers. However, in toddlerhood relations with siblings, peers, and friends become more prominent. Toddlerhood is also when autism first appears for some children, a serious disruption in their social development. Media use continues to be important in toddlerhood, especially television.

The Role of Fathers

LEARNING OBJECTIVE 5.18

Compare and contrast the typical patterns of father involvement with infants and toddlers in traditional cultures and developed countries.

In nearly all cultures, mothers play a central role in the care of infants and toddlers. As we have seen, fathers in traditional cultures are often excluded entirely from the birth process; in the weeks after birth, the mother and neonate are usually together constantly, whereas

polygyny cultural tradition in which men have more than one wife

the father may or may not be involved in early care. There are two reasons that mothers have historically been the primary caretakers of infants and toddlers. The first reason is biological. Because breast milk has usually been the main form of nourishment for human infants during the first half year, the mother tends to be the one who cares for the infant, more than anyone else. Consequently, by toddlerhood mothers are usually the primary attachment figure (Bowlby, 1969; Cassidy & Shaver, 2010).

The second reason has a cultural basis. In most cultures through nearly all of human history, male and female gender roles have been separate and distinct (Gilmore, 1990; Hatfield & Rapson, 1996). In their adult roles, women have been expected to run the household and care for children, whereas men have been expected to protect and provide for the family (Arnett, 1998). In their leisure time women relax with children and other women, and men relax with other men (Gilmore, 1990). Consequently, in most cultures, historically, fathers have been on the periphery of the emotional lives of children.

FATHERS IN TRADITIONAL CULTURES Although fathers are rarely involved in daily child care in traditional cultures, they are part of the child's social environment in other ways. For example, in China the father's traditional role is provider and disciplinarian (Ho, 1987). Care and nurturance is left to the mother. In Latin America, too, the tradition is that the father provides for the family and has unquestioned authority over his children, although in many Latin American cultures this role coexists with warm, affectionate relations with his children (Halgunseth et al., 2006). Many cultures in Africa have a tradition of **polygyny**, meaning that men often have more than one wife (Westoff, 2003). (*Polygamy* is a more general term referring to having two or more spouses, regardless of whether they are wives or husbands.) Households are composed of each wife and her children, with the father either living separately or rotating among them. Here, too, his role is that of provider and disciplinarian, and the children are not usually emotionally close to him (Nsamenang, 1992). Polygyny has become less common in recent decades.

Although the most common cultural pattern worldwide is that fathers serve as providers but are otherwise remote from the emotional lives of infants and toddlers, there are some notable exceptions. Fathers in the Warlpiri culture of aboriginal Australia have a close relationship with their toddlers, but forge a unique bond with their daughters, as we'll see in the **Cultural Focus: Toddlerhood in Aboriginal Australia** feature. Among the Manus people of New Guinea studied by Margaret Mead (1930/2001), during the first year of life the infant and mother are together almost constantly, and the father is involved only occasionally. However, once the child enters toddlerhood and begins to walk the father takes over most child care. The toddler sleeps with the father, plays with him, rides on his back, and goes along on his daily fishing expeditions. Later in childhood, if the parents quarrel and separate, the children often choose to stay with the father, indicating that by then he has become the primary attachment figure.

Fathers in modern developed countries do more child care than they did in the past, but still not as much as mothers do.

A similar nurturing role for the father is found among the Aka people of central Africa, who lived until very recently by hunting and gathering, as all humans did until about 10,000 years ago (Hewlett, 2004). Aka fathers have been called "the most nurturing fathers yet observed" (Engle & Breaux, 1998, p. 5). They frequently hold their infants and toddlers, about five times as much as men in similar hunter-gatherer cultures (Hewlett, 2004). Mothers and fathers share infant and toddler care more or less equally, and both of them have nurturing, affectionate attachments to their children.

FATHERS IN DEVELOPED COUNTRIES The examples of the Manus and the Aka show the flexibility and potential variation of human cultural patterns of fatherhood. Here, as in so many aspects of development, humans have no single biologically driven species-wide pattern of behavior, but learn to behave in ways valued in their cultural traditions. Despite the exceptions, there is a clear norm across human cultures of fathers being relatively remote and removed from close care of infants and toddlers.

In some ways, the role of fathers in developed countries today is in line with the pattern historically and in traditional societies. Across developed countries, fathers interact less with their infants and toddlers than mothers do, and provide less care such as bathing, feeding, dressing, and soothing (Chuang et al., 2004; Day & Lamb, 2004; Lamb & Lewis, 2005; Schwalb et al., 2004). In the United States, about one-third of toddlers live with single mothers; nonresident fathers are less involved in care of their toddlers than fathers who live in the household, although involvement is greater among nonresident fathers who are African American or Latino than among Whites (Cabrera et al., 2008). When fathers do interact with their infants and toddlers, it tends to be in play rather than care, especially in physical, highly stimulating, rough-and-tumble play (Lamb, 2000; Paquette, 2004). Dad is the one throwing the kids in the air and catching them, or wrestling with them, but usually he has not been the one feeding them applesauce or changing their diapers.

Watch the **Video** Rough and Tumble Play at **MyDevelopmentLab**

However, there is a definite trend toward greater father involvement, as gender roles have become more flexible and egalitarian in developed countries (Pleck & Masciadrelli, 2004). American fathers have been found to spend about 85% as much time as mothers do in caring for their young children, and Canadian fathers about 75% (Pleck & Masciadrelli, 2004; Sandberg & Hofferth, 2001; Zuzanek, 2000). Fathers are more likely to provide near-equal care for young children when the mother and father work similar numbers of hours outside the home, and when marital satisfaction is high (NICHD Early Child Care Network, 2000). Like the examples of the Manus and the Aka, the findings of recent changes in fathers' care for young children in developed countries show that parenting is to a large extent a learned rather than innate behavioral pattern that can change as a culture changes.

CULTURAL FOCUS Toddlerhood in Aboriginal Australia

Humans first arrived on the island continent of what is now known as Australia about 40,000 years ago. The first humans brought with them a hunter-gatherer way of life that still is the basis of life for many of their descendants, the Aboriginal Australians. Groups of a few families migrated according to the change of seasons and the availability of food and water, hunting animals such as kangaroos, emus, and lizards, and gathering fruits, seeds, and roots. However, immigrants from the United Kingdom began to arrive in the 18th century, and today, Aboriginal Australians comprise less than 2% of the total Australian population of about 15 million (Frydenberg & Lodge, 2007). The culture of Aboriginal Australians has been impacted in many ways by the majority culture, and many of them now live a Western lifestyle in the cities. Others still live the traditional nomadic way of life, and they will be the focus here, specifically the Warlpiri culture of Aboriginal Australians (Peirrou-tsakos, 2000).

The Warlpiri, like people in many traditional cultures you have read about in this book, believe babies should never be left alone and should rarely, if ever, be placed on the ground. Consequently, it is not until toddlerhood that the children receive much gross motor activity. Nevertheless, they begin to walk around their first birthday and are soon toddling about the camp. Mothers must spend a substantial portion of their day gathering the fruits, seeds, and roots that provide nourishment for their families. When out gathering, they usually will not take their toddler along, so they can focus on the work they are doing. However, in the camp there are always sisters, aunts, or grandmothers who can watch the toddler while the mother is at work. Co-wives also help; the Warlpiri are polygynous.

Walpiri fathers often dote on their daughters.

Warlpiri toddlers breast-feed at least through age 2; traditionally, they breast-fed until they were about 5 years old! Breast feeding provides nourishment

and also serves as a natural contraceptive, inhibiting ovulation so that children will not be too closely spaced. At night, Walpiri toddlers sleep on the ground in the arms of their mothers by the family campfire.

Warlpiri parents are loving, gentle, and generous with their toddlers. Except when they are out gathering food, mothers are with their toddlers nearly all the time, often kissing them and speaking to them in "baby talk" (infant-directed speech, discussed in Chapter 4). Fathers also have close, affectionate relationships with their toddlers, especially doting on their daughters. Part of the father's role includes protecting his daughters from harm, not just in childhood but through adolescence and adulthood. Both mothers and fathers fear that illness and disease may strike their young children, and they use magical methods to ward off these perils, including singing, storytelling, and body painting.

Most Warlpiri children do not speak their first understandable words until about age 2, perhaps because their language includes few short words. During the first 2 years, parents often mimic their infants' and toddlers' vocalizations, as a kind of teasing but affectionate baby talk. Although they begin speaking words later than toddlers in most other cultures, Warlpiri toddlers nevertheless become proficient speakers of their native language by the age of 3.

Aboriginal cultures in Australia were nearly destroyed in the 20th century when the government adopted a policy of forced assimilation and relocation from their traditional lands into government settlements. However, in recent decades this policy was repealed and the Australian government has helped Aboriginal groups return to their ancestral lands. Although Aboriginal cultures have been changed through these experiences, and many of them have adopted the urban way of life of the Australian majority, it is remarkable that many others have been able to sustain something like their traditional way of life.

5.19 The Wider Social World: Siblings, Peers, and Friends

LEARNING OBJECTIVE Describe relationships with siblings, peers, and friends during toddlerhood.

In studies of social development in toddlerhood, the focus has been on relations with parents, especially attachments to mothers. However, among the many ways toddlerhood is distinct from infancy is that the toddler's social world broadens to include a wider range of people, including siblings, peers, and friends.

Watch the **Video** Sibling Rivalry at **MyDevelopmentLab**

APPLYING YOUR KNOWLEDGE . . . as a Teacher

One of your Mexican students in your Grade 3 classroom tells you that she spends her evening and weekends caring for her younger siblings, one of whom is in kindergarten and one of whom is a toddler. She helps their mother bathe them and she helps prepare meals, sometimes even preparing dinner on her own. Should you be alarmed?

THINKING CULTURALLY

What hypothesis could you propose about how sibling relationships in toddlerhood in developing countries might differ from sibling relationships in developed countries, and what would be the basis for your hypothesis?

SIBLINGS: YOUNGER AND OLDER We have seen already how important sibling relationships are for toddlers in traditional cultures, where an older sibling, usually a sister, often takes over the main responsibility for child care from the mother. Toddlers in these cultures most certainly develop an attachment to the older siblings who care for them, but from the limited evidence available, it appears to be a secondary attachment rather than the primary attachment (Ainsworth, 1977; Levine et al., 1994). That is, under most conditions toddlers are content to be under the care of older siblings, but in times of crisis they want the care and comfort of their mothers.

In developed countries, too, studies show that toddlers have attachments to siblings (Shumaker et al., 2011). One study used an adaptation of the Strange Situation to examine American toddlers' attachments to older siblings (Samuels, 1980). Two-year-old toddlers and their mothers were asked to come to the backyard of an unfamiliar home, sometimes with—and sometimes without—a 4-year-old sibling present. When no older sibling was present, the toddlers mostly responded to the mother's departure with distress and to her return with great relief, much as they do in the standard Strange Situation. However, when the older sibling was there along with the toddler, the toddler rarely showed distress when the mother left the backyard. The older sibling provided the emotional comfort and security of an attachment figure, making this outdoor Strange Situation less strange and intimidating.

A substantial amount of research on toddlers' relations with siblings has focused on how they respond to the birth of a younger sibling. Overall, their reaction tends to be negative. Often, following the birth of a younger sibling, toddlers' attachment to the mother changes from secure to insecure, as they feel threatened by all the attention given to the new baby (Teti et al., 1996). Some toddlers display problems such as increased aggressiveness toward others, or become increasingly whiny, demanding,

and disobedient (Hughes & Dunn, 2007). They may regress in their development toward toilet training or self-feeding. Sometimes mothers become less patient and responsive with their toddlers, under the stress of caring for both a toddler and a new baby (Dunn & Kendrick, 1982).

What can parents do to ease the transition for toddlers? Studies indicate that if mothers pay special attention to the toddler before the new baby arrives and explain the feelings and needs of the baby after the birth, toddlers respond more positively to their new sibling (Howe et al., 2001; Hughes & Dunn, 2007; Teti et al., 1996). However, the reality is that across cultures, conflict is more common with siblings than in any other relationship throughout childhood and adolescence, as we will see in more detail in Chapter 6.

What if the toddler is the younger sibling rather than the older sibling? Here there is both an upside and a downside. The upside is that once younger siblings are no longer infants but toddlers, and develop the ability to talk, walk, and share in pretend play, older siblings show less resentment and become much more interested in playing with them (Hughes & Dunn, 2007). By their second year of life, toddlers often imitate their older siblings and look to them for cues on what to do and how to do it (Barr & Hayne, 2003).

The downside is that conflict rises as toddlers become increasingly capable of asserting their own interests and desires. In one study that followed toddlers and their older siblings from when the toddlers were 14 months old to when they were 24 months old, home observations showed that conflict increased steadily during this period and became more physical (Dunn & Munn, 1985). In another study, 15- to 23-month-old toddlers showed remarkably advanced abilities for annoying their older siblings (Dunn, 1988). For example, one toddler left a fight with an older sibling to go and destroy an object the older sibling cherished; another toddler ran to find a toy spider and pushed it in his older sibling's face, knowing the older sibling was afraid of spiders!

In sum, toddlers' relations with younger and older siblings are often characterized by ambivalence, a combination of positive and negative emotions. It is important to add that there is a great range of individual differences here. In other words, some toddlers get along a lot better with their siblings than others do, for reasons such as gender similarity or difference, spacing between siblings, and the mesh or clash of personalities (Hughes & Dunn, 2007).

Toddlers often react negatively to the birth of a younger sibling.

Watch the **Video** Play in Early Childhood at **MyDevelopmentLab**

PEERS AND . . . FRIENDS? In most cultures, toddlerhood is a time of forming the first social relations outside the family. In traditional cultures, this usually means being part of a peer play group that may include siblings and cousins as well as other children. These play groups usually include children of a variety of ages, but toddlerhood is when children first come into the group after having been cared for during infancy mainly by the mother and an older girl.

In developed countries, too, peer relations expand in toddlerhood, often in the form of some kind of group care such as a child-care center (Rubin et al., 2006). Research observing toddlers in these settings has found that their peer play interactions are more advanced than early studies had reported. One influential early study reported that toddlers engaged exclusively in *solitary play*, all by themselves, or *parallel play*, in which they would take part in the same activity but without acknowledging each other (Parten, 1932). However, more recent studies have found that toddlers engage in not only solitary and parallel play but in *simple social play*, where they talk to each other, smile, and give and receive toys, and even in *cooperative pretend play*, involving a shared fantasy such as pretending to be animals (Howes, 1996; Hughes & Dunn, 2007).

Furthermore, toddlers who know each other well tend to engage in more advanced forms of play than unacquainted toddlers. In one study of toddlers attending the same child-care center, even young toddlers (16–17 months old) engaged in simple social play

Toddlers in developed countries engage in advanced forms of play with their friends.

Toddler friends smile and laugh more with each other than they do with nonfriends. Here, three boys in South Africa share a laugh.

(Howes, 1985). By 24 months, half of the toddlers engaged in cooperative pretend play, and this kind of play was observed in all the toddlers between 30 and 36 months old. This is a striking contrast to studies of social relations among unacquainted toddlers, which had found mainly solitary and parallel play, with cooperative pretend play not appearing until at least age 3 (Howes, 1996; Hughes & Dunn, 2007)

Clearly toddlers are capable of playing with each other in a variety of ways, but do they really form friendships? A substantial and growing body of research suggests they do (Goldman & Buysse, 2007). Their friendships appear to have many of the same features of friendships at other ages, such as companionship, mutual affection, and emotional closeness (Rubin et al., 2006). Even shortly after their first birthday, toddlers prefer some of their child-care or play-group peers over others and seek them out as companions when they are together (Shonkoff & Phillips, 2000). Like older children and even adults, toddlers choose each other as friends based partly on similarities, such as activity level and social skills (Rubin et al., 2006). Toddlers who become friends develop favorite games they play when together (Howes, 1996). Toddler friends share emotions more frequently with each other than they do with nonfriends. They smile and laugh more, but also have more conflicts, although conflicts between toddler friends are milder and more quickly resolved than among nonfriends (Ross & Lollis, 1989). Friendships do change in quality with age, as we will see in the chapters to come, but even in toddlerhood many of the features of friendship are evident.

Autism: A Disruption in Social Development

5.20 LEARNING OBJECTIVE

Identify the characteristics of autism and recognize how autism affects prospects for children as they grow to adulthood.

In 1938, a well-known child psychiatrist received a visit from parents concerned about their little boy, Donald (Donovan & Zucker, 2010). According to the parents, even as a baby Donald had displayed "no apparent affection" (p .85) for his parents, and still did not. He never cried when separated from them or wished to be comforted by them. Nor did he seem interested in other adults or children, appearing to "live within himself" (p. 85) with no need for social relations. Furthermore, Donald's use of language was peculiar. He was often unresponsive to his parents' instructions and requests, and did not even react to his own name. Yet certain unusual words captivated him and he would repeat them over and over again: *trumpet vine*, *business*, *chrysanthemum*. He enjoyed repetition not only of words but of behaviors, such as spinning round objects.

This description became the basis of the initial diagnosis of what became known as **autism**, and the main features of the diagnosis are the same today as they were for Donald: (1) lack of interest in social relations, (2) abnormal language development, and (3) repetitive behavior. Many children with autism also prefer to have highly predictable routines and hate to have them disrupted. Some also have exceptional, isolated mental skills—Donald, for example, could multiply large numbers instantly in his head—but this is rare. The majority of children with autism are low in intelligence and exhibit some degree of intellectual disability (Lord, 2010).

Watch the **Video** Against Odds: Children with Autism at **MyDevelopmentLab**

About 1 in 500 children is affected by autism, and another 4 in 100 have some but not all features of autism and are classified as having *autistic spectrum disorder* (ASD). These rates are consistent across Asia, Europe, and North America, with some variation based on diagnostic criteria used (Centers for Disease Control and Prevention [CDC], 2010). The origins of the disorder are unclear. It is believed to have a genetic basis, as evidence of abnormal brain development is present in the unusually large brains of children who

autism developmental disorder marked by a lack of interest in social relations, abnormal language development, and repetitive behavior

will later develop autism (Hadjikhani et al., 2004). Various environmental causes for autism have been proposed, from dietary contributors to toddlerhood vaccines, but none of them has been supported by research. Rates of autism have increased in recent decades in developed countries, but there is no consensus on the reasons for the increase (CDC, 2010). It may be that disorders once diagnosed as schizophrenia or mental retardation are now diagnosed as autism due to increased awareness of the disorder (Donovan & Zucker, 2010). Physicians in many countries now routinely screen toddlers for the disorder, whereas they did not in the past (CDC, 2010).

Usually the diagnosis of autism or ASD is made during toddlerhood, between 18 and 30 months of age (Filipek et al., 2000). However, studies analyzing home videos of infants later diagnosed with autism indicate that signs of the disorder are already present in infancy (Dawson et al., 1998; Werner et al., 2000). Even at 8 to 10 months old, infants with autism show little or no evidence of normal social behaviors. They do not engage in joint attention with parents, or point to objects to show to others, or look at others, or respond to their own name. During infancy some of this behavior could be attributed to differences in temperament, but the diagnosis of autism becomes more definite in toddlerhood with the failure to develop language skills during a period that is normally a time of dramatic advances. About half of children with autism never develop language skills well enough to communicate about even basic needs, and the half who do develop some language skills are nevertheless impaired in their ability to communicate with others (Hale & Tager-Flusberg, 2005). Their social deficits compound their language deficits: Their lack of interest in others and lack of ability to understand others' perspectives makes it difficult for them to engage in the normal exchange of conversation that other people perform without effort, even in toddlerhood.

Toddlers with autism have deficits in their social and language development. Here, a boy plays alone at a school for children with autism in Beijing, China.

What happens to children with autism when they grow up? Eighty-five percent of them continue to live with parents, siblings, or other relatives (Donvan & Zucker, 2010). Some live in government-sponsored group homes, and in rare cases they are able to function at a high enough level to live alone, as Donald (now in his 70s) does. In some ways autism becomes more problematic in adulthood than in childhood, because adults with autism often lack emotional regulation as children with autism do but are bigger and can cause more disruption. They also develop sexual desires, without the social knowledge of the appropriate expression of those desires. There is no cure for autism and few effective treatments, but with help, many children and adults with autism can learn some skills for daily living, such as wearing clean clothes, asking for directions (and then following them), and keeping track of money.

Media Use in Toddlerhood

LEARNING OBJECTIVE 5.21

Identify the typical rates of television use in toddlerhood and explain some consequences of toddlers' TV watching.

Media use among toddlers is more limited than it will be at later ages, when it will include everything from computers to cell phones to magazines. However, media use, especially television, is a typical part of daily life in most countries, even during toddlerhood. According to a national study in the United States, 58% of children under 3 watch TV every day, and 30% even have a TV in their bedroom (Rideout & Hamel, 2006). African

Television shows with prosocial themes can inspire prosocial behavior in toddlers.

American and Latino toddlers watch more TV than toddlers in other ethnic groups, initiating a pattern of ethnic differences that will continue throughout life (Anand et al., 2005).

Already in the second year of life, toddlers have begun to understand that the images on the TV screen are not real. In one study, 9-month-old infants and 14- and 19-month-old toddlers were shown a video in which a woman demonstrated how to play with a variety of toys for young children (Pierroutsakos & Troseth, 2003). The infants reached out to the screen and attempted to grasp, hit, or rub the toys, but the toddlers did not. However, other studies have shown that toddlers sometimes interact with televised images by talking to them, which suggests that for toddlers the television/reality boundary is not completely clear (Garrison & Christakis, 2005).

How does TV-watching influence toddlers? Surveys indicate that a majority of American parents fear that TV may harm their young children (Rideout et al., 2003; Woodward & Gridina, 2000). However, with television, as with other media we will examine in future chapters, the effects depend very much on the media content. In one American study, one group of 2-year-olds was shown the TV show *Barney and Friends*, featuring a large, purple, talking dinosaur who encourages behavior such as kindness and sharing. This group was then compared in free play to another group of 2-year-olds who had not seen the show (Singer & Singer, 1998). The toddlers in the *Barney* group showed more prosocial behavior, such as sharing, and less aggressiveness, along with a greater tendency to engage in symbolic play. In a national (American) study, 70% of parents of children under age 3 reported that their toddlers had imitated positive behavior they had seen on television, such as sharing or helping, whereas only 27% had imitated aggressive behavior such as hitting or kicking (Rideout & Hamel, 2006).

With regard to the effects of TV-watching on cognitive development, evidence is mixed, with some studies indicating that watching TV helps toddlers expand their vocabularies and others reporting that it may be detrimental to language development (Courage & Setliff, 2009). Again, content matters. One study had parents report toddlers' TV-viewing patterns every three months from age 6–30 months, then assessed the toddlers' language development at 30 months (Linebarger & Walker, 2005). Watching educationally oriented programs such as *Dora the Explorer* resulted in greater vocabularies and higher expressive language scores than watching other programs did. Other studies have found that TV can inspire imaginative play among toddlers (Weber, 2006). I remember this well from when my twins were toddlers, how they would watch a TV show or a video and then invent their own elaborate games pretending to be characters they had watched, such as the *Teletubbies* or *Peter Pan*. We even bought them Teletubbies dolls to facilitate the games.

displacement effect in media research, term for how media use occupies time that may have been spent on other activities

Even if TV sometimes inspires prosocial or creative behavior, a persistent concern about television use from toddlerhood onward is the **displacement effect;** that is, the fact that time spent watching TV is time not spent doing other activities such as reading or playing with other children (Weber, 2006). In 2001, the American Academy of Pediatrics recommended that children under 2 years old should not watch television at all, and children 2 years and older should be limited to no more than 2 hours of TV a day (American Academy of Pediatrics Committee on Public Education, 2001). The basis for this recommendation was not that television content is damaging but that young children would benefit more from active learning through experiences

APPLYING YOUR KNOWLEDGE

How does the displacement effect change—if at all—from toddlerhood through adulthood?

such as play and conversations with others (Kirkorian et al., 2008). It should be added that in many households the television is on nearly all the time, and consequently even toddlers are exposed to TV content that is a long way from *Barney* (Rideout & Hamel, 2006).

Watch the **Video** Limitations on TV Commercials for Children at **MyDevelopmentLab**

WHAT HAVE YOU LEARNED?

Study and **Review** at **MyDevelopmentLab**

1. What are some exceptions to the typical pattern of father involvement with infant and toddlers in traditional cultures?
2. How is the typical pattern of father involvement with infant and toddlers in developed countries changing?
3. How do toddlers respond to the birth of a younger sibling? How do toddlers' relations with younger siblings differ from their relations with older siblings?
4. What kinds of play are typical between toddlers?
5. What are the main features, causes, and consequences of autism?
6. What are some of the consequences—both positive and negative—of toddlers' TV use?

Section 3 VIDEO GUIDE Separation Anxiety Across Cultures (Length: 6:10)

In this video, we explore the development of attachment among infants and toddlers by observing how children at different ages and from various cultures react to being approached by strangers and separated from their primary caregivers.

1. Describe an instance when you have witnessed a child experiencing separation or stranger anxiety.

2. The clip here shows examples of separation and stranger anxiety. Discuss the difference between pure separation anxiety and the impact that including a stranger can have on a child's reaction.

3. Which of Piaget's concepts is linked to separation anxiety? Explain this connection.

Watch the **Video** Separation Anxiety Across Cultures at **MyDevelopmentLab**

Summing Up

Study and **Review** at **MyDevelopmentLab**

Listen at **MyDevelopmentLab** Listen to an audio file of your chapter at **MyDevelopmentLab**

SECTION 1 PHYSICAL DEVELOPMENT

5.1 Describe the typical changes in physical growth that take place in toddlerhood and explain the harmful effects of nutritional deficiencies on growth.

Toddlers' physical growth continues at a pace that is slightly reduced from infancy but is nevertheless faster than at any later time of life. Toddlers in developing countries often suffer protein and micronutrient deficiencies that impede their physical and cognitive development.

5.2 Describe the changes in brain development that take place during toddlerhood, and identify the two most common methods of measuring brain activity.

The brain's synaptic density peaks at the end of toddlerhood, followed by many years of synaptic pruning. The two most common methods of measuring brain activity are the EEG and the fMRI.

5.3 Describe the changes in sleeping patterns and sleeping arrangements that take place during toddlerhood.

Toddlers' episodes of night-waking increase from 18 to 24 months of age, in part due to teething of molars. In traditional cultures, toddlers sleep with their mothers until the next child is born, after which they sleep with other family members.

5.4 Describe the advances in motor development that take place during toddlerhood.

In their gross motor development, toddlers learn to walk, run, climb, and kick a ball. Toddlers in traditional cultures are often restricted in their movements to protect them from danger—especially cooking fires. Advances in fine motor development include holding a cup and building a tower of blocks. In their third year, toddlers may be able to brush their teeth, with some assistance.

5.5 Compare and contrast the process and timing of toilet training in developed countries and traditional cultures.

Children vary widely in the timing of learning toilet training, but most are toilet trained by the end of toddlerhood. In traditional cultures, toddlers usually learn controlled elimination through observing and imitating older children.

5.6 Distinguish the weaning process early in infancy from weaning later in toddlerhood.

When weaning takes place in the second or third year of life, toddlers often resist. Customs in traditional cultures for promoting weaning include sending the toddler to a relative's household for awhile or coating the mother's breast with an unpleasant substance.

KEY TERMS

kwashiorkor *p. 178*
micronutrients *p. 178*
synaptic density *p. 179*
EEG (electroencephalogram) *p. 179*
fMRI (functional magnetic resonance imaging) *p. 179*
weaning *p. 185*

SECTION 2 COGNITIVE DEVELOPMENT

5.7 Outline the cognitive achievements of toddlerhood in Piaget's theory.

According to Piaget, the ability for mental representations develops in the second half of the second year and is the basis for important aspects of later cognitive functioning, including problem solving and language. Object permanence also reaches near-completion during this period. Deferred imitation and categorization also require mental representation.

5.8 Explain Vygotsky's sociocultural theory of cognitive development and contrast it with Piaget's theory.

Unlike Piaget and most other cognitive theorists and researchers, Vygotsky emphasized the cultural basis of cognitive development in childhood. He proposed concepts such as scaffolding and the zone of proximal development to describe how children obtain cultural knowledge from adults.

5.9 Summarize the evidence for the biological and evolutionary bases of language.

In humans the larynx is lower in the throat than it is in other primates, making spoken language possible. Humans also have areas in the brain specifically devoted to language functions. Anatomically the capacity for language appears to have developed in early hominids 2 million years ago.

5.10 Describe the milestones in language development that take place during the toddler years.

At 18 months, most toddlers speak about 50 words, usually in holophrases. By 24 months, most speak about 200 words and combine some words in telegraphic speech. By their third birthdays, most can easily use the language of their culture in full sentences.

5.11 Identify how parents' stimulation of toddlers' language varies across cultures and evaluate how these variations relate to language development.

Cultures vary widely in how much they encourage toddlers' language development, from stimulating language use through direct interactions, to allowing toddlers to be present among conversing adults but otherwise not speaking to them much, to actually discouraging them from talking. Regardless of cultural practices, toddlers generally learn to use their language well by the time they reach age 3.

KEY TERMS

mental representations *p. 187*
deferred imitation *p. 188*
zone of proximal development *p. 190*
private speech *p. 190*
scaffolding *p. 190*
guided participation *p. 191*
infinite generativity *p. 192*
Broca's area *p. 192*
Wernicke's area *p. 192*
holophrase *p. 194*
overextension *p. 194*
underextension *p. 194*
fast mapping *p. 194*
telegraphic speech *p. 195*
language acquisition device (LAD) *p. 196*
overregularization *p. 196*

SECTION 3 EMOTIONAL AND SOCIAL DEVELOPMENT

5.12 Describe how emotional development advances during toddlerhood and identify the impact of culture on these changes.

Sociomoral emotions developing in toddlerhood include guilt, shame, embarrassment, envy, and pride. They are called sociomoral emotions because they indicate that toddlers have begun to learn the moral standards of their culture. Toddlers in Western cultures have occasional tantrums, perhaps because they have a more developed sense of intentionality than infants do and so are more likely to protest when thwarted. However, tantrums are rare outside the West where cultures place less emphasis on self-expression.

5.13 Describe the changes in self-development that take place during toddlerhood.

The birth of the self in toddlerhood is indicated in the development of self-recognition and self-reflection. Gender identity also develops during this time, as children begin to identify themselves and others as male or female and to apply gender terms.

5.14 Distinguish between *sex* and *gender* and summarize the evidence for the biological basis of gender development.

Sex is the biological status of being male or female, whereas *gender* refers to the cultural categories of "male" and "female." The biological basis of gender is indicated in evolutionary theory, ethological studies, and hormonal studies. However, changes in male and female roles in recent times have shown that these roles can change dramatically over a relatively short time and therefore biological assumptions about gender should be viewed with skepticism.

5.15 Describe the essential features of attachment theory and identify the four classifications of attachment.

In formulating attachment theory, Bowlby emphasized the evolutionary need for a person who would provide protection and care during the vulnerable early years of life. Ainsworth developed the Strange Situation to assess attachment quality, and concluded that it showed three distinct types of attachment: secure, insecure–avoidant, and insecure–resistant. The young child forms an internal working model depending on the mother's sensitivity and responsiveness. Disorganized–disoriented is a fourth classification, added by later researchers.

5.16 Identify the key factors influencing the quality of toddlers' attachment to their mothers, and explain what effect attachment quality has on development.

The quality of attachment is based mainly on how sensitive and responsive a mother is toward her child. Attachment quality as assessed in toddlerhood does not consistently predict later outcomes, except for the unusual disorganized–disoriented attachment type.

5.17 Summarize the major critiques of attachment theory, including the cultural critique.

Attachment theory has been criticized for not acknowledging temperament sufficiently and for overlooking bidirectional effects. Toddlers in all cultures appear to become attached to those who care for them most, but there are important cultural variations in patterns and norms of attachment.

5.18 Compare and contrast the typical patterns of father involvement with infants and toddlers in traditional cultures and developed countries.

Fathers in traditional cultures usually serve as family providers but are remote from toddlers' emotional lives, although there are exceptions. Across cultures, fathers tend to provide less physical and emotional care than mothers, but this is changing as gender roles and work responsibilities change.

5.19 Describe relationships with siblings, peers, and friends during toddlerhood.

Across cultures, toddlers often react negatively to the birth of a younger sibling. When toddlers themselves are the younger siblings, their older siblings enjoy playing with them more than when they were infants, but conflict tends to rise as toddlers become more capable of asserting their own desires. With friends, toddler play takes a variety of forms, including solitary play, parallel play, simple social play, and cooperative pretend play. Toddlers' friendships often have qualities similar to friendships at older ages, including companionship, mutual affection, and emotional closeness.

5.20 Identify the characteristics of autism and recognize how autism affects prospects for children as they grow to adulthood.

Autism is a developmental disorder marked by a lack of interest in social relations, abnormal language development, and repetitive behavior. The social and language deficits of autism make social development problematic in childhood and beyond.

5.21 Identify the typical rates of television use in toddlerhood and explain some consequences of toddlers' TV watching.

Toddlers in many countries watch TV every day. Television watching in toddlerhood may promote prosocial behavior if the TV content is prosocial, but there are concerns about the displacement effect, especially for children under 2 years old.

KEY TERMS

sociomoral emotions *p. 202*
empathy *p. 202*
prosocial behavior *p. 202*
autonomy versus shame and doubt *p. 203*
self-recognition *p. 203*
self-reflection *p. 203*
gender identity *p. 204*
sex *p. 204*
gender *p. 204*
ethology *p. 205*
primary attachment figure *p. 207*
stranger anxiety *p. 208*
secure base *p. 208*
separation anxiety *p. 208*
Strange Situation *p. 209*
secure attachment *p. 209*
insecure–avoidant attachment *p. 209*
insecure–resistant attachment *p. 209*
disorganized–disoriented attachment *p. 209*
amae *p. 215*
polygyny *p. 216*
autism *p. 220*
displacement effect *p. 222*

Practice Test

Study and **Review** at **MyDevelopmentLab**

1. _____ is a condition specific to toddlerhood in which protein deficiencies lead to varied symptoms such as swollen bellies, hair loss, and lack of energy.
   a. Kwashiorkor **b.** SIDS
   c. Marasmus **d.** Dysentery

2. What most characterizes early brain development in toddlerhood is
   a. the formation of the cerebral cortex.
   b. the steep increase in the density of synaptic connections among neurons.
   c. activity in the amygdala.
   d. the production of new brain cells.

3. During toddlerhood,
   a. sleeping alone is rare in traditional cultures.
   b. children sleep more than they did in infancy (because they are so much more active).
   c. naps are no longer needed.
   d. children sleep consistently throughout the night.

4. Toddlers
   a. who do not walk by 1 year are likely to have a gross motor problem.
   b. in traditional cultures are equal to toddlers from Western cultures in the development of their gross motor skills.
   c. can usually run before they can stand briefly on one leg.
   d. show the same pace of gross motor development as fine motor development.

5. In the West,
   a. most children show signs of readiness for toilet training by their first birthday.
   b. views about toilet training have stayed the same over the last several decades.
   c. children are toilet trained in a nearly identical way as their counterparts in traditional cultures.
   d. a sign of being ready to begin toilet training is when the child can stay "dry" for an hour or two during the day.

6. If you are a toddler from a traditional culture, you would likely
   a. have experienced some customary practice for being weaned.
   b. be abruptly weaned at age 1.
   c. be given formula instead of breast milk.
   d. still be breast-feeding at age 5.