Module 47

Infancy and Childhood: Cognitive Development


Image Source/Getty Images

Module Learning Objectives

47-1 Describe how a child's mind develops from the perspectives of Piaget, Vygotsky, and today's researchers.

47-2 Explain how autism spectrum disorder affects development.

47-1 From the perspectives of Piaget, Vygotsky, and today's researchers, how does a child's mind develop?

Somewhere on your precarious journey "from egghood to personhood" (Broks, 2007), you became conscious. When was that, and how did your mind unfold from there? Developmental psychologist Jean Piaget [pee-ah-ZHAY] spent his life searching for the answers to such questions. He studied children's **cognitive** development—all the mental activities associated with thinking, knowing, remembering, and communicating. His interest began in 1920, when he was in Paris developing questions for children's intelligence tests. While administering the tests, Piaget became intrigued by children's wrong answers, which were often strikingly similar among same-age children. Where others saw childish mistakes, Piaget saw intelligence at work.

Jean Piaget (1896–1980) "If we examine the intellectual development of the individual or of the whole of humanity, we shall find that the human spirit goes through a certain number of stages, each different from the other" (1930).


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AP® Exam Tip

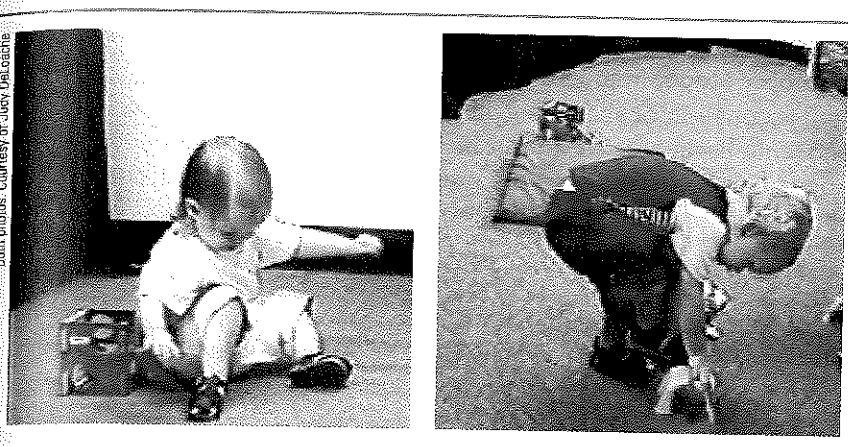
Jean Piaget is such an important person in the history of psychology that it's likely there will be at least one question about him on the AP® exam.

A half-century spent with children convinced Piaget that a child's mind is not a miniature model of an adult's. Thanks partly to his work, we now understand that children reason *differently* than adults, in "wildly illogical ways about problems whose solutions are self-evident to adults" (Brainerd, 1996).

Piaget's studies led him to believe that a child's mind develops through a series of stages, in an upward march from the newborn's simple reflexes to the adult's abstract reasoning power. Thus, an 8-year-old can comprehend things a toddler cannot, such as the analogy that "getting an idea is like having a light turn on in your head," or that a miniature slide is too small for sliding, and a miniature car is much too small to get into (**FIGURE 47.1**).

cognition all the mental activities associated with thinking, knowing, remembering, and communicating.

Piaget's core idea is that the driving force behind our intellectual progression is an unceasing struggle to make sense of our experiences. To this end, the maturing brain



Both photos: Courtesy of Judy DeLoache

Figure 47.1
Scale errors Psychologists report that 18- to 30-month-old children may fail to take the size of an object into account when trying to perform impossible actions with it (DeLoache, Uttal, & Rosengren, 2004). At left, a 21-month-old attempts to slide down a miniature slide. At right, a 24-month-old opens the door to a miniature car and tries to step inside.

builds **schemas,** concepts or mental molds into which we pour our experiences (**FIGURE 47.2**). By adulthood we have built countless schemas, ranging from *cats* and *dogs* to our concept of *love.*

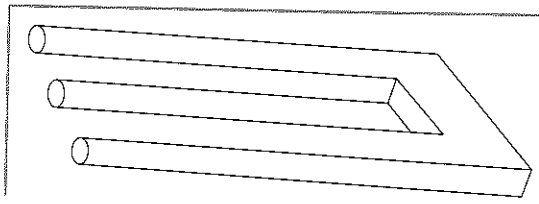
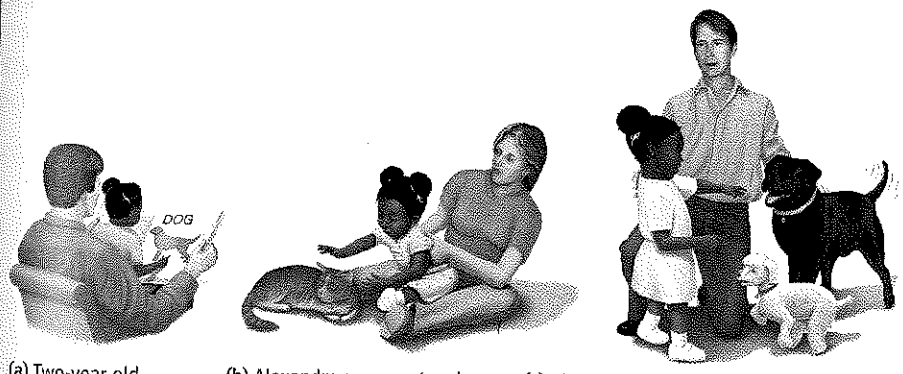


Figure 47.2
An impossible object Look carefully at the "devil's tuning fork." Now look away—no, better first study it some more—and then look away and draw it. . . . Not so easy, is it? Because this tuning fork is an impossible object, you have no schema for such an image.

To explain how we use and adjust our schemas, Piaget proposed two more concepts. First, we **assimilate** new experiences—we interpret them in terms of our current understandings (schemas). Having a simple schema for *dog,* for example, a toddler may call all four-legged animals *dogs.* But as we interact with the world, we also adjust, or **accommodate,** our schemas to incorporate information provided by new experiences. Thus, the child soon learns that the original *dog* schema is too broad and accommodates by refining the category (**FIGURE 47.3**).



(a) Two-year-old Alexandra has learned the schema for *doggy* from her picture books.

(b) Alexandra sees a cat and calls it a *doggy.* She is trying to assimilate this new animal into an existing schema. Her mother tells her, "No, it's a *cat.*"

(c) Alexandra accommodates her schema for furry four-legged animals, distinguishing dogs from cats. Over time her schemas become more sophisticated as she learns to distinguish the pets of family and friends by name.

Figure 47.3
Pouring experience into mental molds We use our existing schemas to *assimilate* new experiences. But sometimes we need to *accommodate* (adjust) our schemas to include new experiences.

Piaget's Theory and Current Thinking

Piaget believed that children construct their understanding of the world while interacting with it. Their minds experience spurts of change, followed by greater stability as they move from one cognitive plateau to the next, each with distinctive characteristics that permit specific kinds of thinking. In Piaget's view, cognitive development consisted of four major stages—*sensorimotor, preoperational, concrete operational,* and *formal operational.*

schema a concept or framework that organizes and interprets information.

assimilation interpreting our new experiences in terms of our existing schemas.

accommodation adapting our current understandings (schemas) to incorporate new information.

Sensorimotor Stage

In the **sensorimotor stage,** from birth to nearly age 2, babies take in the world through their senses and actions—through looking, hearing, touching, mouthing, and grasping. As their hands and limbs begin to move, they learn to make things happen.

Very young babies seem to live in the present: Out of sight is out of mind. In one test, Piaget showed an infant an appealing toy and then flopped his beret over it. Before the age of 6 months, the infant acted as if it ceased to exist. Young infants lack **object permanence**—the awareness that objects continue to exist when not perceived. By 8 months, infants begin exhibiting memory for things no longer seen. If you hide a toy, the infant will momentarily look for it (**FIGURE 47.4**). Within another month or two, the infant will look for it even after being restrained for several seconds.

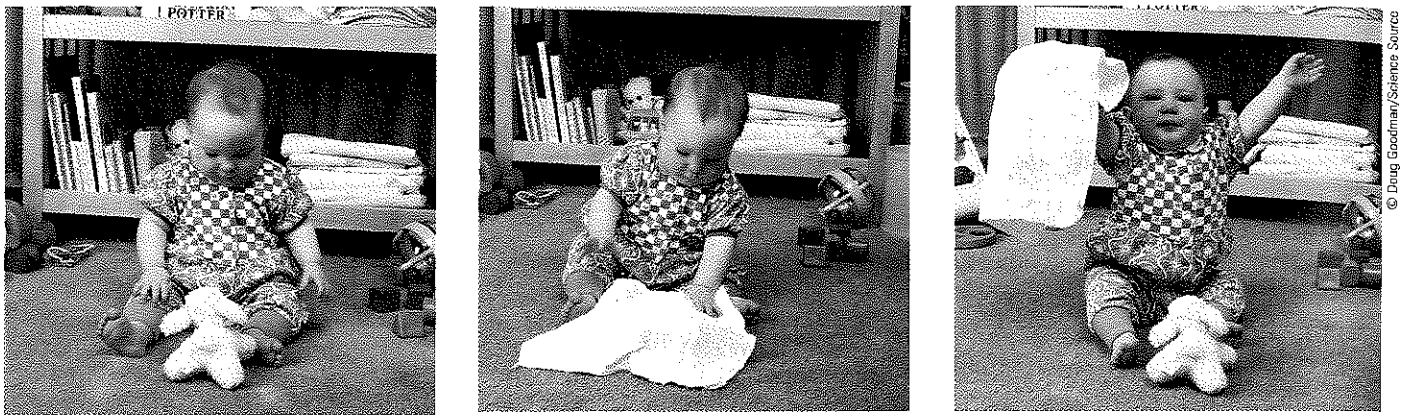


Figure 47.4

Object permanence Infants younger than 6 months seldom understand that things continue to exist when they are out of sight. But for this older infant, out of sight is definitely not out of mind.

So does object permanence in fact blossom at 8 months, much as tulips blossom in spring? Today's researchers think not. They believe object permanence unfolds gradually, and they see development as more continuous than Piaget did. Even young infants will at least momentarily look for a toy where they saw it hidden a second before (Wang et al., 2004).

Researchers also believe Piaget and his followers underestimated young children's competence. Consider these simple experiments:

- *Baby physics:* Like adults staring in disbelief at a magic trick (the *"Whoa!"* look), infants look longer at an unexpected and unfamiliar scene of a car seeming to pass through a solid object, a ball stopping in midair, or an object violating object permanence by magically disappearing (Baillargeon, 1995, 2008; Wellman & Gelman, 1992).
- *Baby math:* Karen Wynn (1992, 2000) showed 5-month-olds one or two objects (**FIGURE 47.5a**). Then she hid the objects behind a screen, and visibly removed or added one (Figure 47.5d). When she lifted the screen, the infants sometimes did a double take, staring longer when shown a wrong number of objects (Figure 47.5f). But were they just responding to a greater or smaller *mass* of objects, rather than a change in *number* (Feigenson et al., 2002)? Later experiments showed that babies' number sense extends to larger numbers, to ratios, and to such things as drumbeats and motions (Libertus & Brannon, 2009; McCrink & Wynn, 2004; Spelke & Kinzler, 2007). If accustomed to a Daffy Duck puppet jumping three times on stage, they showed surprise if it jumped only twice.

Clearly, infants are smarter than Piaget appreciated. Even as babies, we had a lot on our minds.

sensorimotor stage in Piaget's theory, the stage (from birth to about 2 years of age) during which infants know the world mostly in terms of their sensory impressions and motor activities.

object permanence the awareness that things continue to exist even when not perceived.

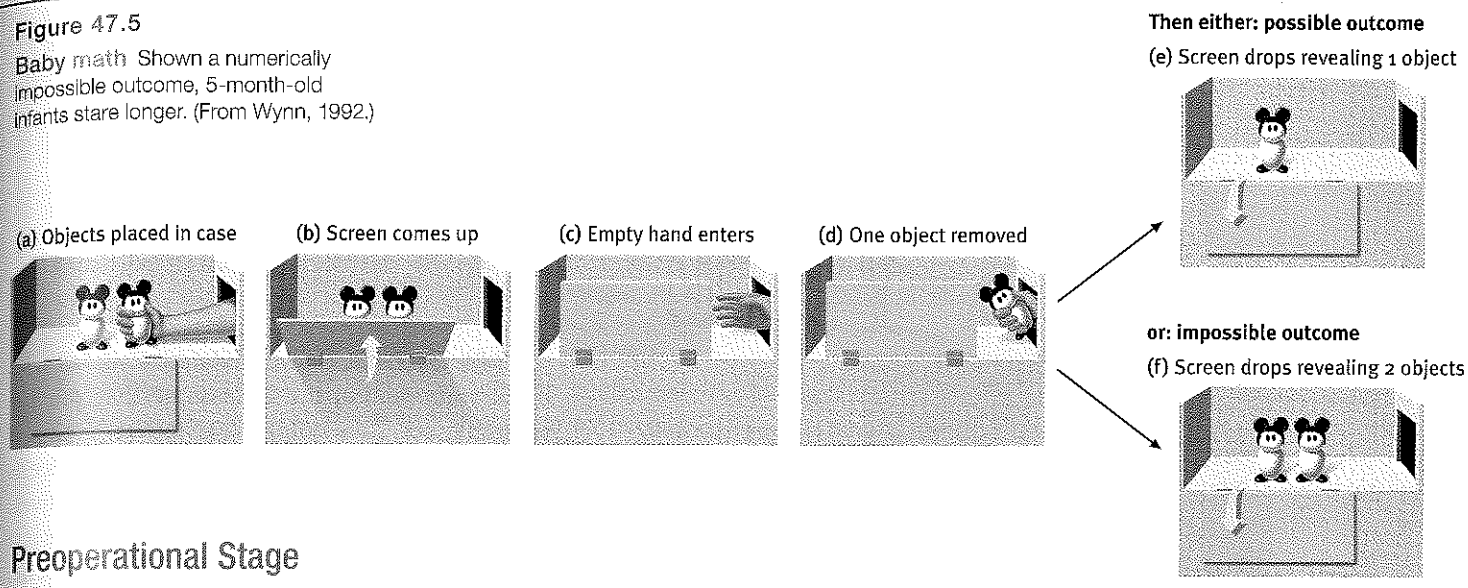


Figure 47.5
Baby math Shown a numerically impossible outcome, 5-month-old infants stare longer. (From Wynn, 1992.)

Preoperational Stage

Piaget believed that until about age 6 or 7, children are in a **preoperational stage**—too young to perform *mental operations* (such as imagining an action and mentally reversing it). For a 5-year-old, the milk that seems "too much" in a tall, narrow glass may become an acceptable amount if poured into a short, wide glass. Focusing only on the height dimension, this child cannot perform the operation of mentally pouring the milk back. Before about age 6, said Piaget, children lack the concept of **conservation**—the principle that quantity remains the same despite changes in shape (**FIGURE 47.6**).

Piaget did not view the stage transitions as abrupt. Even so, *symbolic thinking* (representing things with words and images) appears at an earlier age than he supposed. Judy DeLoache (1987) discovered this when she showed children a model of a room and hid a model toy in it (a miniature stuffed dog behind a miniature couch). The 2½-year-olds easily remembered where to find the miniature toy, but they could not use the model to locate an actual stuffed dog behind a couch in a real room. Three-year-olds—only 6 months older—usually went right to the actual stuffed animal in the real room, showing they *could* think of the model as a symbol for the room. Piaget probably would have been surprised.

preoperational stage in Piaget's theory, the stage (from about 2 to about 6 or 7 years of age) during which a child learns to use language but does not yet comprehend the mental operations of concrete logic.

conservation the principle (which Piaget believed to be a part of concrete operational reasoning) that properties such as mass, volume, and number remain the same despite changes in the forms of objects.

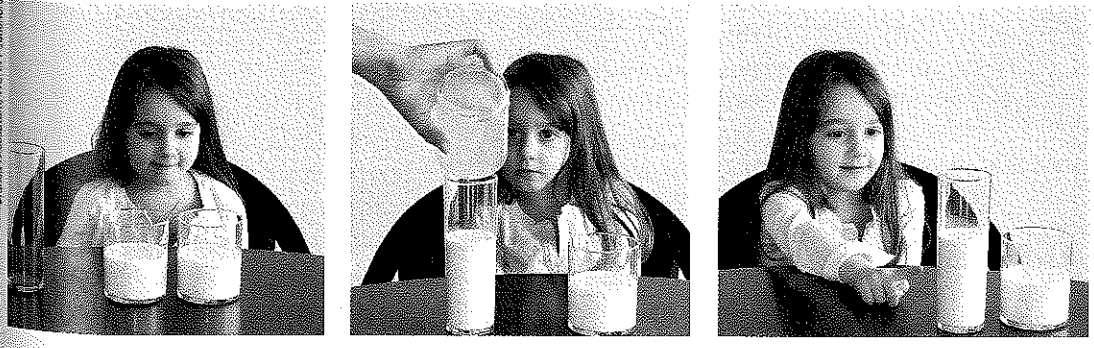
egocentrism in Piaget's theory, the preoperational child's difficulty taking another's point of view.

EGOCENTRISM

Piaget contended that preschool children are **egocentric:** They have difficulty perceiving things from another's point of view. Asked to "show Mommy your picture," 2-year-old Gabriella holds the picture up facing her own eyes. Three-year-old Gray makes himself "invisible" by putting his hands over his eyes, assuming that if he can't see his grandparents,

AP® Exam Tip

Careful! *Egocentric* is not the same as egotistical. Egocentric means you can't take someone else's point of view. Egotistical means you're pretty full of yourself.



Bruce Mozert/Worth Publishers

Figure 47.6
Piaget's test of conservation This preoperational child does not yet understand the principle of conservation of substance. When the milk is poured into a tall, narrow glass, it suddenly seems like "more" than when it was in the shorter, wider glass. In another year or so, she will understand that the quantity stays the same.

"It's too late, Roger—they've seen us."

Roger has not outgrown his early childhood egocentrism.

they can't see him. Children's conversations also reveal their egocentrism, as one young boy demonstrated (Phillips, 1969, p. 61):

"Do you have a brother?"
"Yes."
"What's his name?"
"Jim."
"Does Jim have a brother?"
"No."

Like Gabriella, TV-watching preschoolers who block your view of the TV assume that you see what they see. They simply have not yet developed the ability to take another's viewpoint. Even teens and adults often overestimate the extent to which others share our opinions and perspectives, a trait known as the *curse of knowledge*. We assume that something will be clear to others if it is clear to us, or that text message recipients will "hear" our "just kidding" intent (Epley et al., 2004; Kruger et al., 2005). Children are even more susceptible to this tendency.

theory of mind people's ideas about their own and others' mental states—about their feelings, perceptions, and thoughts, and the behaviors these might predict.

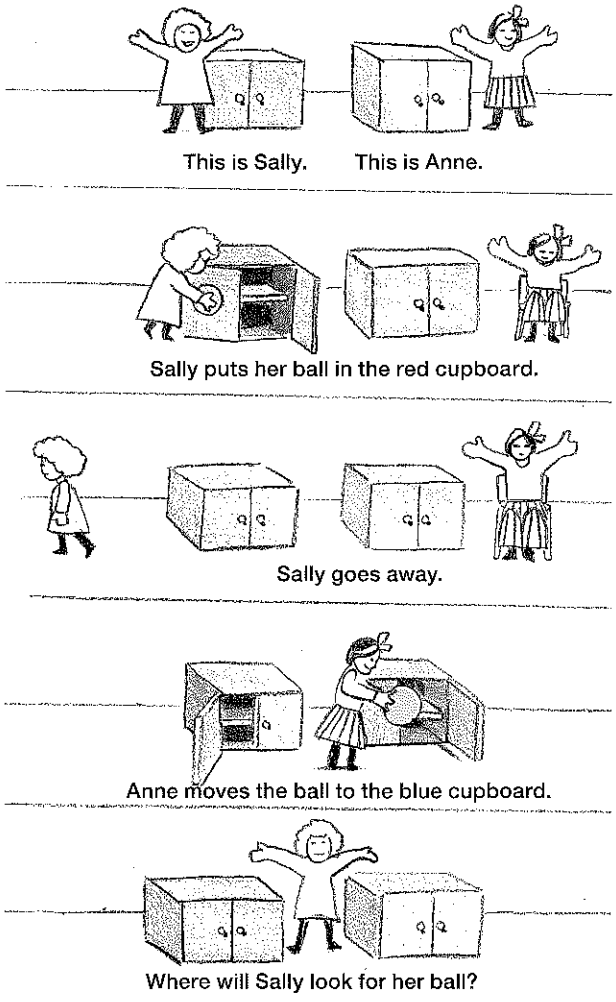
THEORY OF MIND

When Little Red Riding Hood realized her "grandmother" was really a wolf, she swiftly revised her ideas about the creature's intentions and raced away. Preschoolers, although still egocentric, develop this ability to infer others' mental states when they begin forming a **theory of mind** (a term first coined by psychologists to describe chimpanzees' seeming ability to read intentions [Premack & Woodruff, 1978]).

Infants as young as 7 months show some knowledge of others' beliefs (Kovács et al., 2010). With time, the ability to take another's perspective develops. They come to understand what made a playmate angry, when a sibling will share, and what might make a parent buy a toy. And they begin to tease, empathize, and persuade. Between about 3½ and 4½, children worldwide come to realize that others may hold false beliefs (Callaghan et al., 2005; Sabbagh et al., 2006). Researchers showed Toronto children a Band-Aids box and asked them what was inside (Jenkins & Astington, 1996). Expecting Band-Aids, the children were surprised to discover that the box actually contained pencils. Asked what a child who had never seen the box would think was inside, 3-year-olds typically answered "pencils." By age 4 to 5, the children's theory of mind had leapt forward, and they anticipated their friends' false belief that the box would hold Band-Aids.

In a follow-up experiment, children viewed a doll named Sally leaving her ball in a red cupboard (**FIGURE 47.7**). Another doll, Anne, then moves the ball to a blue cupboard. Researchers then pose a question: When Sally returns, where will she look for the ball? Children with *autism spectrum disorder* (ASD; see Close-up: Autism Spectrum Disorder and "Mind-Blindness") have difficulty understanding that Sally's state of mind differs from their own—that Sally, not knowing the ball has been moved, will return to the red cupboard. They also have difficulty reflecting on their own mental states. They are, for example, less likely to use the personal pronouns *I* and *me*. Deaf children with hearing parents and minimal communication opportunities have had similar difficulty inferring others' states of mind (Peterson & Siegal, 1999).

Figure 47.7
Testing children's theory of mind This simple problem illustrates how researchers explore children's presumptions about others' mental states. (Inspired by Baron-Cohen et al., 1985.)



Close-up

Autism Spectrum Disorder and "Mind-Blindness"

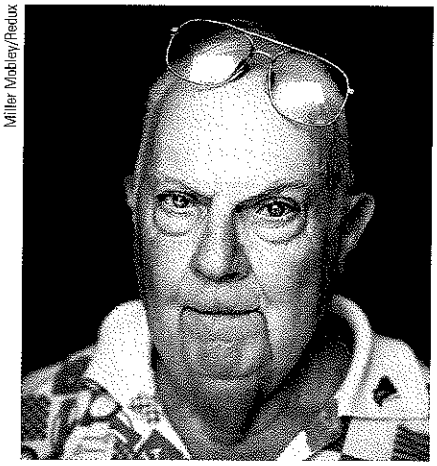
47-2 How does autism spectrum disorder affect development?

autism spectrum disorder (ASD) a disorder that appears in childhood and is marked by significant deficiencies in communication and social interaction, and by rigidly fixated interests and repetitive behaviors.

Diagnoses of **autism spectrum disorder (ASD),** a disorder marked by social deficiencies and repetitive behaviors, have been increasing, according to recent estimates. Once believed to affect 1 in 2500 children, ASD now affects 1 in 110 American children and about 1 in 100 in Britain (CDC, 2009; Lilienfeld & Arkowitz, 2007; NAS, 2011). The increase in ASD diagnoses has been offset by a decrease in the number of children considered "cognitively disabled" or "learning disabled," which suggests a relabeling of children's disorders (Gernsbacher et al., 2005; Grinker, 2007; Shattuck, 2006). A massive $6.7 billion National Children's Study now under way aims to enroll 100,000 pregnant women in 105 countries and to follow their babies until they turn 21—partly in hopes of explaining the rising rates of ASD, as well as premature births, childhood obesity, and asthma (Belluck, 2010; Murphy, 2008).

The underlying source of ASD's symptoms seems to be poor communication among brain regions that normally work together to let us take another's viewpoint. This effect appears to result from ASD-related genes interacting with the environment (State & Šestan, 2012). People with ASD are therefore said to have an *impaired theory of mind* (Rajendran & Mitchell, 2007; Senju et al., 2009). They have difficulty inferring others' thoughts and feelings. They do not appreciate that playmates and parents might view things differently. Mind reading that most of us find intuitive *(Is that face conveying a smirk or a sneer?)* is difficult for those with ASD. Most children learn that another child's pouting mouth signals sadness, and that twinkling eyes mean happiness or mischief. A child with ASD fails to understand these signals (Frith & Frith, 2001).

Miller Mobley/Redux



"Autism" case number 1 In 1943, Donald Gray Triplett, an "odd" child with unusual gifts and social deficits, was the first person to receive the diagnosis of a previously unreported condition, which psychiatrist Leo Kanner termed "autism." (After a 2013 change in the diagnosis manual, his condition is now called autism spectrum disorder.) In 2010, at age 77, Triplett was still living in his family home and Mississippi town, where he often played golf (Donvan & Zucker, 2010).

Ozier Muhammad/The New York Times

Autism spectrum disorder This speech-language pathologist is helping a boy with ASD learn to form sounds and words. ASD is marked by deficient social communication and difficulty grasping others' states of mind.

In hopes of a cure, desperate parents have sometimes subjected children to dubious therapies (Shute, 2010).

ASD (formerly referred to as "autism") has differing levels of severity. "High-functioning" individuals generally have normal intelligence, and they often have an exceptional skill or talent in a specific area. But they lack social and communication skills, and they tend to become distracted by minor and unimportant stimuli (Remington et al., 2009). Those at the spectrum's lower end are unable to use language at all.

ASD afflicts four boys for every girl. Psychologist Simon Baron-Cohen believes this hints at one way to understand this disorder. He has argued that ASD represents an "extreme male brain" (2008, 2009). Although there is some overlap between the sexes, he believes that boys are better "systemizers." They tend to understand things according to rules or laws, for example, as in mathematical and mechanical systems. Children exposed to high levels of the male sex hormone *testosterone* in the womb may develop more masculine and autistic traits (Auyeung et al, 2009).

In contrast, girls are naturally predisposed to be "empathizers," Baron-Cohen contends. They are better at reading facial

(Continued on next page)

Close-up *(continued)*

expressions and gestures, though less so if given testosterone (van Honk et al., 2011).

Biological factors, including genetic influences and abnormal brain development, contribute to ASD (State & Šestan, 2012). Childhood MMR vaccinations do not (Demicheli et al., 2012). Based on a fraudulent 1998 study—"the most damaging medical hoax of the last 100 years" (Flaherty, 2011)—some parents were misled into thinking that the childhood MMR vaccine increased risk of ASD. The unfortunate result was a drop in vaccination rates and an increase in cases of measles and mumps. Some unvaccinated children suffered long-term harm or even death.

Twin and sibling studies provide some evidence for biology's influence. If one identical twin is diagnosed with ASD, the chances are 50 to 70 percent that the co-twin will be as well (Lichtenstein et al., 2010; Sebat et al., 2007). A younger sibling of a child with ASD also is at a heightened risk (Sutcliffe, 2008). Random genetic mutations in sperm-producing cells may also play a role. As men age, these mutations become more frequent, which may help explain why an over-40 man has a much higher risk of fathering a child with ASD than does a man under 30 (Reichenberg et al., 2007). Researchers are now sleuthing ASD's telltale signs in the brain's synaptic and gray matter (Crawley, 2007; Ecker et al., 2010; Garber, 2007).

Biology's role in ASD also appears in brain-function studies. People without ASD often yawn after seeing others yawn. And as they view and imitate another's smiling or frowning, they feel something of what the other is feeling. Not so among those with ASD, who are less imitative and show much less activity in brain areas involved in mirroring others' actions (Dapretto et al., 2006; Perra et al., 2008; Senju et al., 2007). When people with ASD watch another person's hand movements, for example, their brain displays less than normal mirroring activity (Oberman & Ramachandran, 2007; Théoret et al., 2005). Scientists are continuing to explore and vigorously debate the idea that the brains of people with ASD have "broken mirrors" (Gallese et al., 2011).

Seeking to "systemize empathy," Baron-Cohen and his Cambridge University colleagues (2007; Golan et al., 2010) collaborated with Britain's National Autistic Society and a film production company. Knowing that television shows with vehicles have been popular among kids with ASD, they created animations that grafted emotion-conveying faces onto toy tram, train, and tractor characters in a pretend boy's bedroom (**FIGURE 47.8**). After the boy leaves for school, the characters come to life and have experiences that lead them to display various emotions (which I predict you would enjoy viewing at www.thetransporters.com). The children were surprisingly able to generalize what they had learned to a new, real context. By the intervention's end, their previously deficient ability to recognize emotions on real faces now equaled that of children without ASD.

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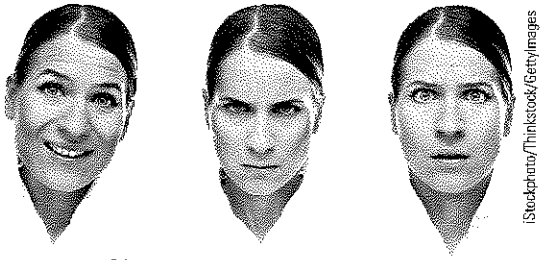
"The neighbor's dog has bitten people before. He is barking at Louise."

Point to the face that shows how Louise is feeling.



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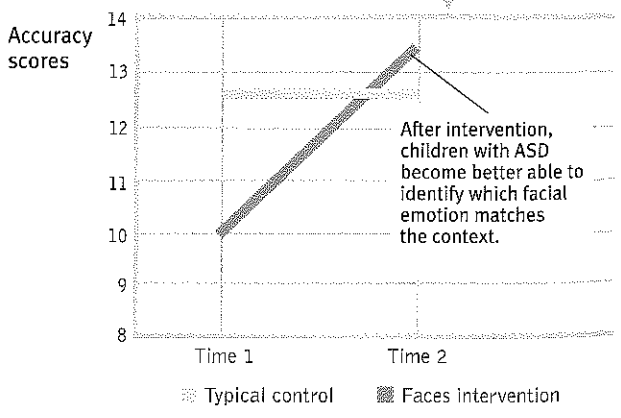
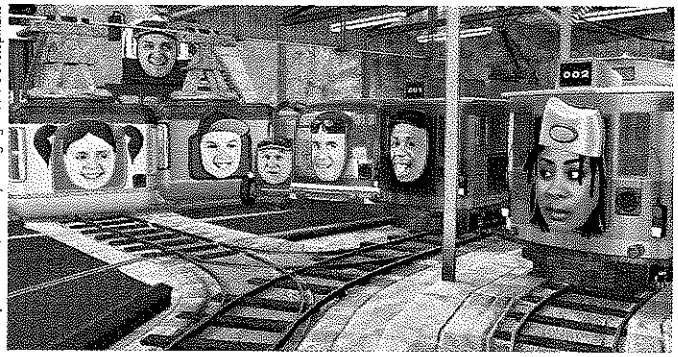


(b) Children matched the correct face with the story and photo. (The graph above shows data from two trials.)



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(a) Emotion-conveying faces were grafted onto toy trains.

Figure 47.8

Transported into a world of emotion (a) A research team at Cambridge University's Autism Research Centre introduced children with ASD to emotions experienced and displayed by toy vehicles. (b) After 4 weeks of viewing animations, the children displayed a markedly increased ability to recognize emotions not only in the toy faces but also in humans.

Concrete Operational Stage

By age 6 or 7, said Piaget, children enter the **concrete operational stage.** Given concrete (physical) materials, they begin to grasp conservation. Understanding that change in form does not mean change in quantity, they can mentally pour milk back and forth between glasses of different shapes. They also enjoy jokes that use this new understanding:

> Mr. Jones went into a restaurant and ordered a whole pizza for his dinner. When the waiter asked if he wanted it cut into 6 or 8 pieces, Mr. Jones said, "Oh, you'd better make it 6, I could never eat 8 pieces!" (McGhee, 1976)

Piaget believed that during the concrete operational stage, children become able to comprehend mathematical transformations and conservation. When my daughter, Laura, was 6, I was astonished at her inability to reverse simple arithmetic. Asked, "What is 8 plus 4?" she required 5 seconds to compute "12," and another 5 seconds to then compute 12 minus 4. By age 8, she could answer a reversed question instantly.

concrete operational stage in Piaget's theory, the stage of cognitive development (from about 6 or 7 to 11 years of age) during which children gain the mental operations that enable them to think logically about concrete events.

formal operational stage in Piaget's theory, the stage of cognitive development (normally beginning about age 12) during which people begin to think logically about abstract concepts.

Formal Operational Stage

By age 12, our reasoning expands from the purely concrete (involving actual experience) to encompass abstract thinking (involving imagined realities and symbols). As children approach adolescence, said Piaget, many become capable of thinking more like scientists. They can ponder hypothetical propositions and deduce consequences: *If* this, *then* that. Systematic reasoning, what Piaget called **formal operational** thinking, is now within their grasp.

Although full-blown logic and reasoning await adolescence, the rudiments of formal operational thinking begin earlier than Piaget realized. Consider this simple problem:

> If John is in school, then Mary is in school. John is in school. What can you say about Mary?

Formal operational thinkers have no trouble answering correctly. But neither do most 7-year-olds (Suppes, 1982). **TABLE 47.1** summarizes the four stages in Piaget's theory.

AP® Exam Tip

One good way to master the developmental milestones in Piaget's theory is to see them in action. If you know children of various ages, you can test them using some of the ideas presented in this section. Hide a toy from an infant to see object permanence in action. Pour water between two differently shaped glasses to see if a preschooler understands conservation.

Table 47.1 Piaget's Stages of Cognitive Development

Typical Age Range	Description of Stage	Developmental Phenomena
Birth to nearly 2 years	*Sensorimotor* Experiencing the world through senses and actions (looking, hearing, touching, mouthing, and grasping)	• Object permanence • Stranger anxiety
About 2 to about 6 or 7 years	*Preoperational* Representing things with words and images (symbolic thinking); using intuitive rather than logical reasoning	• Pretend play • Egocentrism
6 or 7 to 11 years	*Concrete operational* Thinking logically about concrete events; grasping concrete analogies and performing arithmetical operations	• Conservation • Mathematical transformations
About 12 through adulthood	*Formal operational* Abstract reasoning	• Abstract logic • Potential for mature moral reasoning

Jamie Grill/Getty Images

Pretend play

James V. Wertsch/Washington University

Lev Vygotsky (1896–1934)
Vygotsky, a Russian developmental psychologist pictured here with his daughter, studied how a child's mind feeds on the language of social interaction.

An Alternative Viewpoint: Lev Vygotsky's Scaffolding

As Piaget was forming his theory of cognitive development, Russian psychologist Lev Vygotsky was also studying how children think and learn. He noted that by age 7, they increasingly think in words and use words to solve problems. They do this, he said, by internalizing their culture's language and relying on inner speech (Fernyhough, 2008). Parents who say *"No, no!"* when pulling a child's hand away from a cake are giving the child a self-control tool. When the child later needs to resist temptation, he may likewise say *"No, no!"* Second graders who muttered to themselves while doing math problems grasped third-grade math better the following year (Berk, 1994). Whether out loud or inaudibly, talking to themselves helps children control their behavior and emotions and master new skills.

Where Piaget emphasized how the child's mind grows through interaction with the physical environment, Vygotsky emphasized how the child's mind grows through interaction with the *social* environment. If Piaget's child was a young scientist, Vygotsky's was a young apprentice. By mentoring children and giving them new words, parents and others provide a temporary *scaffold* from which children can step to higher levels of thinking (Renninger & Granott, 2005). Language, an important ingredient of social mentoring, provides the building blocks for thinking, noted Vygotsky (who was born the same year as Piaget, but died prematurely of tuberculosis).

Effective mentoring occurs when children are developmentally ready to learn a new skill. For Vygotsky, a child's *zone of proximal development* was the zone between what a child can and can't do—it's what a child can do with help. When learning to ride a bike, it's the developmental zone in which a child can ride with training wheels or a steadying parental hand.

Reflecting on Piaget's Theory

"Assessing the impact of Piaget on developmental psychology is like assessing the impact of Shakespeare on English literature." -Developmental psychologist Harry Beilin (1992)

What remains of Piaget's ideas about the child's mind? Plenty—enough to merit his being singled out by *Time* magazine as one of the twentieth century's 20 most influential scientists and thinkers and rated in a survey of British psychologists as the last century's greatest psychologist (*Psychologist*, 2003). Piaget identified significant cognitive milestones and stimulated worldwide interest in how the mind develops. His emphasis was less on the ages at which children typically reach specific milestones than on their sequence. Studies around the globe, from aboriginal Australia to Algeria to North America, have confirmed that human cognition unfolds basically in the sequence Piaget described (Lourenco & Machado, 1996; Segall et al., 1990).

However, today's researchers see development as more continuous than did Piaget. By detecting the beginnings of each type of thinking at earlier ages, they have revealed conceptual abilities Piaget missed. Moreover, they see formal logic as a smaller part of cognition than he did. Piaget would not be surprised that today, as part of our own cognitive development, we are adapting his ideas to accommodate new findings.

Implications for Parenting and Teaching

"Childhood has its own way of seeing, thinking, and feeling, and there is nothing more foolish than the attempt to put ours in its place." -Philosopher Jean-Jacques Rousseau, 1798

Future parents and teachers remember: Young children are incapable of adult logic. Preschoolers who block one's view of the TV simply have not learned to take another's viewpoint. What seems simple and obvious to us—pestering a cat will lead to scratches—may be incomprehensible to a 3-year-old. Also remember that children are not passive receptacles waiting to be filled with knowledge. Better to build on what they already know, engaging them in concrete

demonstrations and stimulating them to think for themselves. And, finally, accept children's cognitive immaturity as adaptive. It is nature's strategy for keeping children close to protective adults and providing time for learning and socialization (Bjorklund & Green, 1992).

Before You Move On

▶ ASK YOURSELF

Can you recall a time when you misheard some song lyrics because you assimilated them into your own schema? (For hundreds of examples of this phenomenon, visit www.kissthisguy.com.)

▶ TEST YOURSELF

Use Piaget's first three stages of cognitive development to explain why children are not just miniature adults in the way they think.

Answers to the Test Yourself questions can be found in Appendix E at the end of the book.

Module 47 Review

47-1 From the perspectives of Piaget, Vygotsky, and today's researchers, how does a child's mind develop?

- In his theory of *cognitive* development, Jean Piaget proposed that children actively construct and modify their understanding of the world through the processes of *assimilation* and *accommodation*. They form *schemas* that help them organize their experiences.
- Progressing from the simplicity of the *sensorimotor stage* of the first two years, in which they develop *object permanence*, children move to more complex ways of thinking.
- In the *preoperational stage* (about age 2 to about 6 or 7), they develop a *theory of mind*, but they are *egocentric* and unable to perform simple logical operations.
- At age 6 or 7, they enter the *concrete operational stage* and are able to comprehend the principle of *conservation*.
- By about age 12, children enter the *formal operational stage* and can reason systematically.
- Research supports the sequence Piaget proposed, but it also shows that young children are more capable, and their development is more continuous, than he believed.
- Lev Vygotsky's studies of child development focused on the ways a child's mind grows by interacting with the social environment. In his view, parents and caretakers provide temporary scaffolds enabling children to step to higher levels of learning.

47-2 How does autism spectrum disorder affect development?

- ASD is marked by social deficiencies and repetitive behaviors.
- Genetic influences contribute to ASD, as does the male hormone testosterone.

Multiple-Choice Questions

1. Your friend's baby brother, Matt, loves to play with his pet cat. When he sees a puppy, he points and calls it "Mi Mi," which is what he calls his cat. Matt is demonstrating Piaget's process of

a. conservation.
b. accommodation.
c. cognition.
d. object permanence.
e. assimilation.

2. If you showed a 2-year-old that you'd hidden a toy behind the bed in a model of her bedroom, she would not be able to find the toy in her real bedroom because she lacks

a. analytical thinking.
b. random thinking.
c. symbolic thinking.
d. schematic thinking.
e. egocentric thinking.

3. Vygotsky called the space between what a child could learn with and without help the

a. theory of mind.
b. zone of abstract logic.
c. zone of abstract reasoning.
d. zone of proximal development.
e. zone of developmental readiness.

4. Which of the following is a current belief of researchers that differs from Piaget's original theories?

a. Infants simply have less information about the world than older children and adults.
b. Object permanence develops earlier than Piaget believed.
c. Infants learn more by verbal explanations than Piaget believed.
d. Accommodation is a process that doesn't occur in young children.
e. Schemas don't form until later than Piaget believed.

5. Which of the following cognitive abilities is possible only at the formal operational stage?

a. Reversing arithmetic operations
b. Using a theory of mind to predict the behavior of others
c. Using hypothetical situations as the basis of moral reasoning
d. Using symbolic thinking for pretend play
e. Understanding basic physics to recognize impossible situations

6. Which of the following identifies children's difficulty seeing another's perspective?

a. Abstract thinker
b. Role player
c. Egocentric thinker
d. A child who understands conservation
e. A child who demonstrates high mental operations

7. Which of the following would indicate that a child understood conservation?

a. She would continue to seek a toy hidden under a blanket.
b. She would "hide" in a game of hide-and-seek by covering her eyes with her hands.
c. She would believe that a clay snake would have the same amount of clay as the clay ball that was used to make it.
d. She would recognize that 7 + 3 involves the same mathematical relationship as 10 – 7.
e. She would be able to comprehend the logic of if-then statements.

Practice FRQs

1. Describe Lev Vygotsky's ideas on the role of language, scaffolding, and the zone of proximal development in cognitive development. How did his theory differ from that of Jean Piaget?

Answer

1 point: Vygotsky believed that as children grow, they increasingly use words to solve problems and think. Adults help with this process by giving them words to internalize behaviors.

1 point: Scaffolding is the way in which parents and others mentor children to promote cognitive growth, often through providing new words to describe a situation.

1 point: The zone of proximal development marks the border between what children can learn on their own or with help.

1 point: The major difference is that Piaget thought cognitive development resulted from children's interactions with their physical environment, while Vygotsky believed they learned through social interactions.

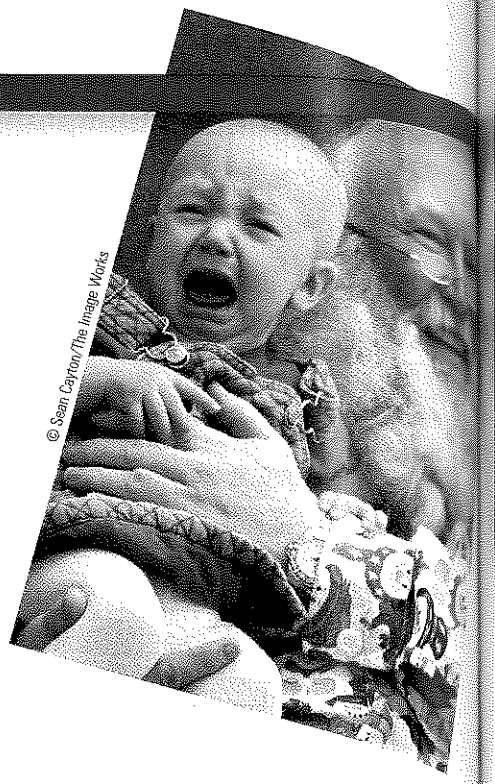
2. Define and give an example of each of the cognitive milestones listed below:

- Object permanence
- Conservation
- Theory of mind

(3 points)

Module 48

Infancy and Childhood: Social Development



Module Learning Objectives

48-1 Describe how parent-infant attachment bonds form.

48-2 Describe how psychologists study attachment differences, and discuss their findings about the effect of temperament and parenting.

48-3 Discuss how childhood neglect, abuse, or family disruption affect children's attachments.

48-4 Discuss the effect of day care on children.

48-5 Trace the onset and development of children's self-concept.

48-6 Describe three parenting styles, and explain how children's traits relate to them.

48-1 How do parent-infant attachment bonds form?

From birth, babies in all cultures are social creatures, developing an intense bond with their caregivers. Infants come to prefer familiar faces and voices, then to coo and gurgle when given a parent's attention. At about 8 months, soon after object permanence emerges and children become mobile, a curious thing happens: They develop **stranger anxiety.** They may greet strangers by crying and self-protectively reaching for familiar caregivers. "No! Don't leave me!" their distress seems to say. Children this age have schemas for familiar faces; when they cannot assimilate the new face into these remembered schemas, they become distressed (Kagan, 1984). Once again, we see an important principle: *The brain, mind, and social-emotional behavior develop together.*

stranger anxiety the fear of strangers that infants commonly display, beginning by about 8 months of age.

attachment an emotional tie with another person; shown in young children by their seeking closeness to the caregiver and showing distress on separation.

Origins of Attachment

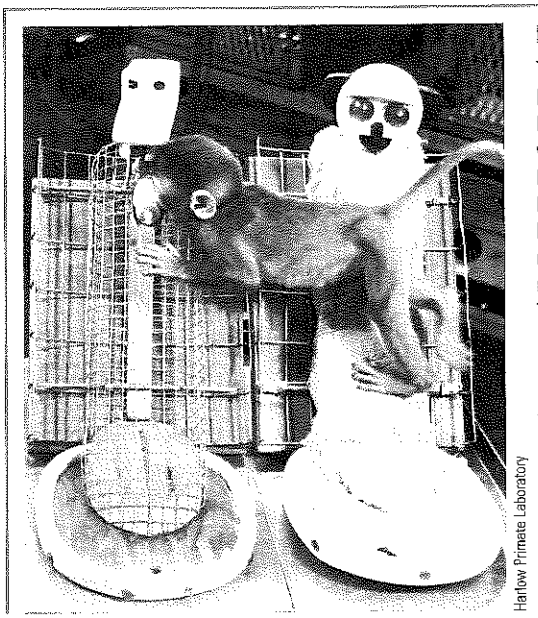
One-year-olds typically cling tightly to a parent when they are frightened or expect separation. Reunited after being apart, they shower the parent with smiles and hugs. No social behavior is more striking than the intense and mutual infant-parent bond. This **attachment** bond is a powerful survival impulse that keeps infants close to their caregivers. Infants become attached to those—typically their parents—who are comfortable and familiar. For many years, psychologists reasoned that infants became attached to those who satisfied their need for nourishment. It made sense. But an accidental finding overturned this explanation.

Body Contact

During the 1950s, University of Wisconsin psychologists Harry Harlow and Margaret Harlow bred monkeys for their learning studies. To equalize experiences and to isolate any disease, they separated the infant monkeys from their mothers shortly after birth and raised them in sanitary individual cages, which included a cheesecloth baby blanket (Harlow et al., 1971). Then came a surprise: When their blankets were taken to be laundered, the monkeys became distressed.

The Harlows recognized that this intense attachment to the blanket contradicted the idea that attachment derives from an association with nourishment. But how could they show this more convincingly? To pit the drawing power of a food source against the contact comfort of the blanket, they created two artificial mothers. One was a bare wire cylinder with a wooden head and an attached feeding bottle, the other cylinder wrapped with terry cloth.

When raised with both, the monkeys overwhelmingly preferred the comfy cloth mother (**FIGURE 48.1**). Like other infants clinging to their live mothers, the monkey babies would cling to their cloth mothers when anxious. When exploring their environment, they used her as a *secure base,* as if attached to her by an invisible elastic band that stretched only so far before pulling them back. Researchers soon learned that other qualities—rocking, warmth, and feeding—made the cloth mother even more appealing.



Harlow Primate Laboratory

Figure 48.1
The Harlows' monkey mothers Psychologists Harry Harlow and Margaret Harlow raised monkeys with two artificial mothers—one a bare wire cylinder with a wooden head and an attached feeding bottle, the other a cylinder with no bottle but covered with foam rubber and wrapped with terry cloth. The Harlows' discovery surprised many psychologists: The infants much preferred contact with the comfortable cloth mother, even while feeding from the nourishing mother.

Human infants, too, become attached to parents who are soft and warm and who rock, feed, and pat. Much parent-infant emotional communication occurs via touch (Hertenstein et al., 2006), which can be either soothing (snuggles) or arousing (tickles). Human attachment also consists of one person providing another with a secure base from which to explore and a safe haven when distressed. As we mature, our secure base and safe haven shift—from parents to peers and partners (Cassidy & Shaver, 1999). But at all ages we are social creatures. We gain strength when someone offers, by words and actions, a safe haven: "I will be here. I am interested in you. Come what may, I will support you" (Crowell & Waters, 1994).

PYI

For some people, a perceived relationship with God functions as do other attachments, by providing a secure base for exploration and a safe haven when threatened (Granqvist et al., 2010; Kirkpatrick, 1999).

Familiarity

Contact is one key to attachment. Another is familiarity. In many animals, attachments based on familiarity form during a **critical period**—an optimal period when certain events must take place to facilitate proper development (Bornstein, 1989). For goslings, ducklings, or chicks, that period falls in the hours shortly after hatching, when the first moving object they see is normally their mother. From then on, the young fowl follow her, and her alone.

Konrad Lorenz (1937) explored this rigid attachment process, called **imprinting.** He wondered: What would ducklings do if he was the first moving creature they observed? What they did was follow him around: Everywhere that Konrad went, the ducks were sure to go. Although baby birds imprint best to their own species, they also will imprint to a variety of moving objects—an animal of another species, a box on wheels, a bouncing ball (Colombo, 1982; Johnson, 1992). Once formed, this attachment is difficult to reverse.

critical period an optimal period early in the life of an organism when exposure to certain stimuli or experiences produces normal development.

imprinting the process by which certain animals form strong attachments during an early-life critical period.