



# Language Development

From their very first cries, human beings communicate with the world around them. Infants communicate through sounds (crying and cooing) and through body language (pointing and other gestures). However, sometime between 8 and 18 months of age, a major developmental milestone occurs when infants begin to use words to speak. Words are symbolic representations; that is, when a child says “table,” we understand that the word represents the object. **Language** can be defined as a system of symbols that is used to communicate. Although language is used to communicate with others, we may also talk to ourselves and use words in our thinking. The words we use can influence the way we think about and understand our experiences.

After defining some basic aspects of language that we use throughout the chapter, we describe some of the theories that are used to explain the amazing process by which we understand and produce language. We then look at the brain’s role in processing and producing language. After a description of the stages of language development—from a baby’s first cries through the slang used by teenagers—we look at the topic of bilingualism. We examine how learning to speak more than one language affects a child’s language development and how our educational system is trying to accommodate the increasing number of bilingual children in the classroom. Finally, we end the chapter with information about disorders that can interfere with children’s language development.



**Language** A system of symbols that is used to communicate with others or in our thinking.

## Aspects of Language

There are four basic aspects of language that have been studied: phonology, syntax, semantics, and pragmatics. **Phonology** is the study of the sounds of a language. (To remember this term, think of the sounds that come from your *telephone*, or the word *cacophony*, meaning a lot of loud, annoying sounds.) **Syntax** is the grammar of a language—that is, how we put words in order and how we change words (for example, *play* becomes *played* when we talk about the past) so they make sense to our listeners. **Semantics** is the meanings of words. **Pragmatics** is how we use language. For example, you probably speak in different ways to your professor, to your friends, and certainly to a 2-year-old. In each case, you are using language in a different way. When children develop the ability to communicate with language, they are developing all four of these areas (Gleason, 2005). They must understand and form the sounds of the language they are learning. They must learn what words mean and how to put them together so they make sense, and they must learn when and how to use language to accommodate their listeners and to accomplish their goals. We consider all of these aspects as we describe language development.

Two basic units are central to the study of language and its development: morphemes and phonemes. A **morpheme** is the smallest unit that has meaning in a language. For example, the word *cats* has two morphemes: *cat* and *s*. *Cat* refers to the animal, and *s* means more than one. A **phoneme** is the smallest distinct sound in a particular language. For

**Phonology** The study of the sounds of a language.

**Syntax** The grammar of a language.

**Semantics** The study of the meanings of words.

**Pragmatics** The rules that guide how we use language in social situations.

**Morpheme** The smallest unit in a language that has meaning.

**Phoneme** The smallest distinct sound in a particular language.

example, *go* has two phonemes: *g* and *o*, and *check* has three phonemes: *ch*, *e*, and *ck* (National Reading Panel, 2000a). Different languages have types of phonemes that are distinct. For instance, in Japanese, the length of a vowel can indicate a different word. The word *toko* means “bed,” while *toko* with a long final *o* means “travel” (Sato, Sogabe, & Mazuka, 2010). In English, no matter how long we draw out the *a* in *cat*, it still means “cat.”

## Theories of Language Development

There are many different ideas about how children learn to talk and understand language, and many controversies persist to this day. We are still learning about how this amazing process can occur so quickly in the first years of life.

### Behaviorism and Social Cognitive Learning Theory

If you were to take a survey of people on the street and ask them how children learn language, the chances are that many would answer “by imitation.” Of course imitation must play an important



**A mother-infant “conversation.”** Social cognitive theory emphasizes the importance of social interaction for language learning. As this mother talks to her infant, she models using language to communicate, and the infant wants to imitate his mother to continue the fun.

role. After all, children learn the language that they hear, not some other language. The idea that language is learned through imitation is connected with Bandura’s theory of social cognitive learning that we read about in Chapter 2. Imitation is the central learning principle of social cognitive learning theory.

According to B. F. Skinner (1957/1991), language is also shaped through operant conditioning and the use of reinforcement. When we respond to a baby’s babbling with a smile or some vocalization of our own, babies babble even more. If we respond to a request for “cookie” with the desired cookie, it becomes more likely that the child will use that word again the next time she wants a cookie. If we remember that reinforcement is anything that makes a behavior continue, then

it is clear that we reinforce the development of a child’s language in many ways. Consistent with these ideas, research has shown that the more that mothers respond to their babies’ vocalizations, the sooner their babies develop language (Tamis-LeMonda, Bornstein, & Baumwell, 2001).

**Nativism** A theory of language development that hypothesizes that human brains are innately wired to learn language and that hearing spoken language triggers the activation of a universal grammar.

### Nativism

In contrast to the ideas proposed by operant conditioning and social cognitive theory, both of which focus on interactions in the environment, Noam Chomsky (1968) developed a theory that proposes that the human brain is innately wired to learn language, a theory known as **nativism**. He believes that children could not learn something as complex as human language as quickly as they do unless there is already a grammatical structure for language hardwired in their brains

before they ever hear human language. He calls this **universal grammar**. According to this theory, hearing spoken language triggers the activation of this structure and does more than just promote imitation. Chomsky believes that the language that we usually hear is not enough on its own to explain the construction of all of the rules of language that children quickly learn.

For instance, nativists such as Chomsky point to the evidence that children will say things they have never heard, such as “The cats eated the mouses” rather than “The cats ate the mice.” We *hope* that children have never heard adults say something like “eated” or “mouses,” and therefore they could not just be imitating language they have heard. However, you can easily see that, although the first sentence is grammatically incorrect, in some respects it *could be* correct. In English we do add *-ed* for the past tense and *-s* for plurals. However, we have exceptions to those rules, called irregular verbs or nouns. When children make this type of grammatical error they are showing that they have learned a pattern, but they are applying it to words that don’t follow that pattern. This process of acting as if irregular words follow the regular rules is called **overregularization**. Children are creating these words from their own understanding of grammar. Chomsky believes that the basic principles of grammar are innate. Clearly, we do not all speak the same language and the rules for grammar are not the same in all languages, so how can there be a universal grammar? Chomsky believes that there are basic language principles that are hardwired in the brain, similar to the basic principles that underlie the operation of the hard drive of your computer. Just as your computer’s hard drive can run many different types of software, the language structures in your brain can process the specific characteristics of many different languages.

## Interactionism

A third approach incorporates aspects of both behaviorism and nativism. According to **interactionism**, both children’s biological readiness to learn language and their experiences with language in their environment come together to bring about language development. Just as we learned about how nature is expressed through nurture in Chapter 4, these theorists argue that both are equally necessary for the child to develop language and both must work together.

In addition, interactionism means that language is created socially, in the interaction between infant and adult. For example, adults naturally simplify their speech to young children not because they think “I need to teach this child how to speak” but because the child then understands and responds to what the adult is saying. The adult is sensitive to the effectiveness of his communication so that when the child does not understand, he simplifies his language until the child does understand (Bohannon & Bonvillian, 2005). Research on mother-infant speech has found that mothers in a variety of cultures make many of the same modifications in their speech to infants, perhaps because these changes produce a good fit between the mother’s speech and the infant’s perceptual and cognitive capabilities (Fernald & Morikawa, 1993). In addition, adults often repeat what children say but **recast** it into more advanced grammar. For example, a child might say, “More cookie,” and the adult might respond, “Oh, do you want more cookies?” In the process, he is modeling a slightly higher level of language proficiency, which the child can then imitate. The child in this example might then say, “Want more cookies.”

## Cognitive Processing Theory

The question has been raised whether social interaction and biological readiness are enough to explain how children learn language. A newer view is that learning language is a process of “data crunching,” in which children take in and process the language they hear (Hoff & Naigles, 2002, p. 422). These theorists argue that infants are processing language even during the first year of life, before they can speak (Naigles et al., 2009). Therefore, their understanding of language is learned and is not innate as Chomsky’s theory asserts. These theorists would say

### Universal grammar

A hypothesized set of grammatical rules and constraints proposed by Chomsky that is thought to underlie all languages and that is hardwired in the human brain.

### Overregularization

A type of grammatical error in which children apply a language rule to words that don’t follow that rule or pattern (for example, adding an *s* to make the plural of an irregular noun such as *foot*).

### Interactionism

A theory of language development that proposes that the child’s biological readiness to learn language interacts with the child’s experiences with language in the environment to bring about the child’s language development.

**Recast** Repeating what children say but in a more advanced grammar to facilitate language learning.

**Cognitive processing theory** The theory that learning language is a process of “data crunching,” in which the actual process of learning words and their meanings relies on the computational ability of the human brain.

**Transitional probability** The likelihood that one particular sound will follow another one to form a word.

that although the learning may be *motivated* by social interaction, the actual process of learning words and their meanings may rely more on the computational ability of the human brain. Hoff and Naigles (2002) found that toddlers learned more words when their mothers exposed them to more language; that is, they talked to them more and used more different words and longer, more complex utterances. **Cognitive processing** theorists argue that language learning happens independently of mothers’ responsiveness to their children’s speech and of children’s social abilities. They point to the fact that even socially limited children with autism can develop language as evidence that language development is not solely dependent on social interaction.

One basic question that this approach has addressed is how infants learn to differentiate words out of the stream of sounds they hear. Although we can see the spaces between words on a written page, these “spaces” are often not evident when we speak. For example, if you heard someone say, “Theelephantisdrinkingwater,” how would you figure out that *elephant* is a separate word rather than *antis*? One answer is that infants’ brains are constantly “crunching data” and figuring out statistically how likely it is that certain sounds will follow each other. This likelihood is referred to as the **transitional probability** (Saffran, Johnson, Aslin, & Newport, 1999). For example, when we hear *ele*, it is most often followed by *phant* or *vator*, so there is a high transitional probability between these syllables. However, the entire word *elephant* can be followed in a sentence by many different sounds and any particular sequence has a low transitional probability. Researchers have used made-up words embedded in random syllables to see whether adults, children, and infants can differentiate the “words” from the rest of the utterance (Saffran et al., 1999; Saffran, Newport, Aslin, Tunick, & Barrueco, 1997). Take a look at the “sentence” below and see if you can figure out what the “word” is:

*Bupadapatubitutibubupadadutabapidabupada*

Did you discover *bupada*? When people of all ages hear lengthy readings such as this they are able to pick out what the “words” are even though they have no real meaning. When these concepts were applied to discriminating words in a real, but unfamiliar language (Italian), 8-month-olds were able to use conditional probabilities to differentiate words that they had heard in a stream of conversation from nonwords (Pelucchi, Hay, & Saffran, 2009), and were also likely to figure out the meaning of those words (Hay, Pelucchi, Estes, & Saffran, 2011; Lany & Saffran, 2010).

## Language and the Brain

**Broca’s area** The part of the brain that is involved in the physical production of speech.

**Wernicke’s area** The part of the brain that has to do with understanding the meaning in speech.

As we learned in Chapter 6, there are two halves or hemispheres that comprise the human brain. The left hemisphere contains two areas that are central to language: Broca’s area and Wernicke’s area. As shown in Figure 9.1, **Broca’s area**, which is involved in the production of speech, is located near the motor center of the brain that produces movement of the tongue and lips (Gleason, 2005). A person with damage to this area will have difficulty speaking, and as a consequence will use the fewest number of words needed to get his message across. For example, when a person with damage in Broca’s area was asked about his upcoming weekend plans, he answered, “Boston. College. Football. Saturday” (Gleason, 2005, p. 17).

You can see in Figure 9.1 that **Wernicke’s area**, which has to do with understanding and creating the meaning in speech, is located near the auditory center of the brain. Someone with damage to this area of the brain has no trouble producing words, but he has difficulty making sense with what he is saying. For example, one patient with damage to Wernicke’s area responded as follows to the question “What brings you to the hospital?”

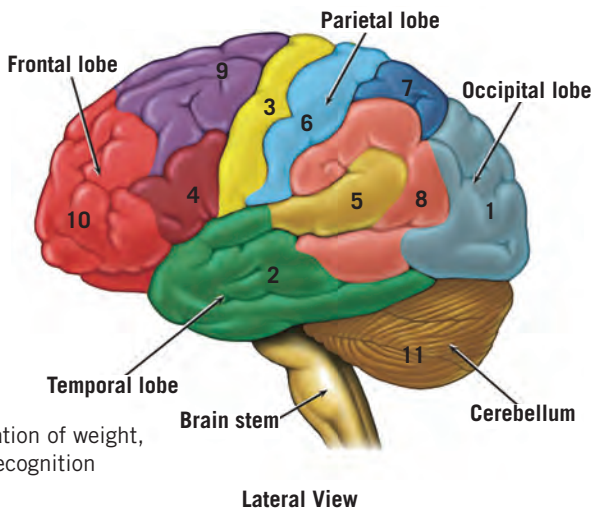
Boy I’m sweating, I’m awful nervous, you know, once in a while I get caught up, I can’t mention the tar-ripoi, a month ago, quite a little, I’ve done a lot well, I impose a lot, while, on the other hand, you know what I mean, I have to run around, look it over, trebbin and all that sort of stuff. (Gardner, 1976, p. 68)

Figure 9.1

**Language centers of the brain.** Broca's area (shown here in dark red), which controls speech production, is next to the motor cortex that controls movement. Wernicke's area (shown in pink), which controls language comprehension, is next to the auditory area that controls hearing.

#### Functional Areas of the Cerebral Cortex

- 1 **Visual Area:** Sight, Image recognition, Image perception
- 2 **Association Area** Short-term memory, Equilibrium, Emotion
- 3 **Motor Function Area** Initiation of voluntary muscles
- 4 **Broca's Area** Muscles of speech
- 5 **Auditory Area** Hearing
- 6 **Sensory Area** Sensation from muscles and skin
- 7 **Somatosensory Association Area** Evaluation of weight, texture, temperature, etc. for object recognition
- 8 **Wernicke's Area** Written and spoken language comprehension
- 9 **Motor Function Area** Eye movement and orientation
- 10 **Higher Mental Functions** Concentration, Planning, Judgment, Emotional expression, Creativity, Inhibition
- 11 **Motor Functions** Coordination of movement, Balance and equilibrium, Posture



This patient speaks without any problem but is not making any sense and makes up words, such as *trebbin*.

The capabilities of these two regions do not develop at the same time. Infants *understand* words before they can *say* them. Another way we describe this is to say comprehension of language precedes production of language. When you tell a 1-year-old to put a toy in a box, she will most likely *understand* you and might follow your directions, yet she is not likely to be able to *say* anything close to “put the toy in the box.” This differential between **receptive** and **expressive language** continues throughout life (Celce-Murcia & Olshtain, 2001). Even college students can understand a sophisticated or technical lecture in class, while their own speech and writing are likely to be less complex. The brain is not a simple organ, and we continue to learn about its complexity. For instance, although language is primarily handled by the left hemisphere of the brain, some aspects of language, such as recognition of the emotion in someone's words, are found in the right hemisphere (Gleason, 2005).

#### Receptive language

The ability to understand words or sentences.

#### Expressive language

The written or spoken language that we use to convey our thoughts, emotions, or needs.

## Stages of Language Development

In this section we describe the development of language. We purposely de-emphasize the ages at which these developments occur because children differ enormously in the rate at which they develop language. One major question that remains controversial is whether there is a specific age beyond which children are not capable of developing language. To see how our thinking has changed on this issue see **Journey of Research: Is There a Critical Period for Language Learning?**

## JOURNEY of RESEARCH



VIDEO LINK 9.1  
Genie Part I



VIDEO LINK 9.2  
Genie Part II



VIDEO LINK 9.3  
Genie Part III

## Is There a Critical Period for Language Learning?

There has long been discussion of whether there is a certain window of opportunity for children to learn language and whether after this period it is no longer possible to develop language. This would mean that infants and children who are deprived of environmental stimulation and early facilitation of language learning may have basic difficulty with language that lasts their whole lives.

Evidence for the existence of such a critical period for language learning comes from studies of children who were severely deprived during the early years of life. One famous case is that of a girl called Genie. Throughout her childhood, she spent most of her time strapped to a chair in a back bedroom of her family home where she had little social contact or interaction with others. In 1970, the girl's situation came to the attention of welfare authorities in Los Angeles, and at age 13 Genie was removed from her home. At that point her overall development was severely retarded, and she had little functional language. As horrific as these circumstances were, Genie provided a unique opportunity for scientists to examine the idea that there is a critical period for language development. At 13 years of age, Genie was already past the age when children normally develop language. Developmentalists used a variety of methods to promote her language development and carefully documented her progress (Rymer, 1993). Although Genie learned words, she could never develop the use of grammar (Curtiss, 1977). This conclusion has been reported over and over again as evidence for a critical period for language learning. However, Peter Jones (1995) reexamined data from Curtiss's earlier study of Genie and came to a different conclusion. Look at several things that Genie was able to say in 1974 and 1975:

"I want think about Mama riding bus."

"Teacher said Genie have temper tantrum outside."

"I do not have a toy green basket."

These sentences may not be perfect, but they show quite complex levels of grammatical construction. Jones (1995) concluded that Genie

was able to develop language, and in particular grammar, even at her advanced age.

On the other hand, there is a case report of a woman called Chelsea who was incorrectly diagnosed as mentally retarded until she was 31 years old, when it was discovered that she was deaf. When she was given hearing aids she was able to learn words, but was never able to develop normal grammar. Here are some sentences she produced:

"banana the eat"

"Peter sandwich bread turkey" (Herschensohn, 2007, p. 91).

The importance of a window of opportunity for language learning is illustrated by the research on orphans who lived the first months of their lives in poorly equipped and poorly staffed orphanages in Romania where they suffered extreme deprivation. Those who were placed with foster families before the age of two had few problems with language development, whereas those who were adopted at an older age had marked language delays (Windsor et al., 2011). However, please note that these are delays, not disorders likely to last throughout a child's life.

Researchers speculated that brain development was responsible for the critical period for language learning. Specifically, the hypothesis was that certain parts of the brain work most efficiently until a certain age, and then the restructuring of the neural connections forces the brain to use entirely different areas for learning language. However, recent research using brain imaging techniques has shown that individuals continue to learn language, including a second language, with the same parts of the brain as in first language learning (Stowe & Sabourin, 2005).

Clearly, language is learned most efficiently in early life, but the idea that there is a critical period beyond which an individual cannot learn language is currently in dispute. Language itself is very complex. The different aspects we've described of phonology, syntax, semantics, and pragmatics all develop in numerous ways, so it should not be surprising that some of these aspects can develop at later times than others.

## Prenatal Development

Language learning appears to begin before birth. As we described in Chapter 6, during the last trimester of prenatal development the fetus can hear its mother's voice as shown by changes in fetal heart rate and motor activity when the mother is speaking, and this affects the infant's preferences for language after birth in a number of ways (Karmiloff & Karmiloff-Smith, 2001). This was demonstrated in a study in which pregnant women read passages from a specific book, such as Dr. Seuss's *The Cat in the Hat*, twice a day when they thought their fetus was awake (DeCasper & Spence, 1986). After the babies were born, those who had heard the story were more likely to try to elicit the sound of their mother reading *The Cat in the Hat* (rather than a new poem they had never heard before) by sucking a pacifier in a certain way. It appears that infants become familiar with and prefer "the rhythms and sounds of language" that they have heard prenatally (Karmiloff & Karmiloff-Smith, 2001, p. 43). As a result, within the first few days of life infants show a preference for the particular language their mother speaks, whether it is English, Arabic, or Chinese. In addition, newborns who had heard their mothers regularly speak more than one language show a preference for both languages (Byers-Heinlein, Burns, & Werker, 2010). This prenatal awareness of language sets the stage for language learning once the baby is born. In one study it was even shown that babies only 3 to 5 days old sound like the language they have been hearing when they cry. French babies cried from low pitch to high, while German babies cried from high pitch to low, mimicking the sounds of the language they hear (Mampe, Friederici, Christophe, & Wermke, 2009).

## Infants' Preverbal Communication

### Crying

Babies cry as soon as they are born. At first this is a reflexive behavior, not intentional communication from the infant. The process of communication begins when babies begin to learn that crying can act as a signal that brings relief from hunger, discomfort, and loneliness because it motivates adults to do what it takes to make it stop.

Although babies cry for many reasons, there does not appear to be clear evidence that they have different cries for hunger, pain, or loneliness. Research shows only that parents differentiate the intensity and severity of crying, not the specific reason for the cry (Gustafson, Wood, & Green, 2000). Knowing this should bring relief to parents who have been told that they should recognize *why* their baby is crying but realize that they cannot.

### Cooing

Between 2 and 4 months after birth, babies begin to make more pleasant sounds (Menn & Stoel-Gammon, 2005). The first sounds that infants are able to produce are soft vowel sounds, so they sound a bit like doves "cooing." At this stage they also begin

**Why is this baby crying?** Babies' cries do not communicate specific information, except intensity of pain or discomfort. The parent must figure out from experience why the baby would be crying at that particular time: Is it time for a nap, a feeding, or just some company?



### TRUE/FALSE #1

Infants are born with a preference for listening to their native language.

**True.** Infants can hear before they are born, and they develop a preference for the sound patterns of the language they hear prenatally.



### TRUE/FALSE #2

A sensitive parent should be able to tell the difference between a baby who is crying because he is hungry and one who is crying because he is in pain or is lonely.

**False.** Infants' crying can differ in intensity and severity, but there does not appear to be a specific cry to signal hunger, pain, or loneliness. Even sensitive parents usually can't make these distinctions.



VIDEO LINK 9.4  
Cooing



VIDEO LINK 9.5  
Early babbling



VIDEO LINK 9.6  
Later babbling

to laugh, which is a great reward to parents. Infants at this stage begin to join in a prelanguage “conversation” with parents (Tamis-LeMonda, Cristofaro, Rodriguez, & Bornstein, 2006). The baby coos; the parent talks back; the baby looks and laughs; the parent smiles and talks. In this way, babies begin to learn how to *use* language even before they can speak.

### Babbling

Babies typically begin to make one-syllable sounds, such as *ba* and *da*, when they are 4 to 6 months old and begin to combine those sounds repetitively (*baba, gaga*) when they are 6 to 8 months old (Sachs, 2005). Among the most common consonant sounds are /b/, /d/, and /m/. At this point, parents get very excited, thinking that the baby means “daddy” when he says “dada” or “mommy” when he says “mama.” Although it does not appear that these first vocalizations are meaningful, babies may start to learn they have meaning because of the way their parents respond to these sounds (Menn & Stoel-Gammon, 2005). It is interesting to note that in languages from around the world, even among those with no common origins, the words for *father*—*dada* (English), *abba* (Hebrew), and *baba* (Mandarin Chinese)—and *mother*—*mama* (English), *abm* (Arabic), and *manah* (Greek)—start with the earliest sounds babies make.

*Bababa* changes to *daDAW ee derBEH* as babbling begins to sound more and more like the language the baby is hearing (maybe the second phrase sounds like *the doggie under the bed*) and *not* like other languages. Although babies initially are able to make all the sounds in languages around the world, at this point a baby growing up with English will not produce the type of /r/ sounds used in French or Spanish because the baby is not hearing those sounds in the language environment. Now the feedback from hearing speech plays more of a role in language development than it did earlier. Deaf babies will babble early on, but at the age when hearing babies increase the variety of their sounds, deaf babies do not because they are not receiving this language input from their environment (Menn & Stoel-Gammon, 2005). On the other hand, deaf babies who are learning sign language appear to go through the same stages of language learning as hearing babies, in this case “babbling” with hand gestures instead of sounds.

## Preverbal Perception of Language

We’ve already seen that infants respond to language even before they are born. It is also true that they are learning a great deal about language before they can say even one word. Babies younger than 6 months of age can distinguish the sounds made in all languages, but by 10 months, infants have lost some of that ability (Best & McRoberts, 2003). For example, in Hindi, there are two distinct sounds that sound like “da” to English speakers. One is made the same way as in English, but the other is made with the tongue on the roof of the mouth. Babies in an English language environment can discriminate these two sounds until about 10 months of age, when they lose the ability to make the distinction between these two sounds that they are not hearing in their native language (Werker, Gilbert, Humphrey, & Tees, 1981). Asian infants can tell the difference between the English language sounds “ra” and “la,” but adults from that region of the world have a more difficult time doing so because this discrimination is not found in the language they speak (Sheldon & Strange, 1982).

The process by which infants narrow their perception to the specific language they are hearing appears to be linked to later language production. Infants who are better at discriminating sounds in their native language at 7 months have better language development during the second year of life, while infants who are better at discriminating sounds in a nonnative language at 7 months have more delayed language development (Kuhl, Conboy, Padden, Nelson, & Pruitt, 2005).

## How Adults Foster Language Development

Before we continue our description of the stages of language development, let’s take a focused look at the role that adults play in fostering young children’s language development. In many



cultures, adults begin to shape infants' developing language ability by talking to them, even when it is clear that the babies do not understand. Adults act as if they do understand and carry on conversations, taking turns with whatever the baby responds. Karmiloff and Karmiloff-Smith (2001) provide the following illustration:

**Mother:** Oh, so you're HUNgry, are you?  
(Baby kicks.)

**Mother:** YES, you ARE hungry. WELL, we'll have to give you some MILK then, won't we?  
(Baby coos.)

**Mother:** Ah, so Mommy was RIGHT. It's MILK you want. Shall we change your diaper first?  
(Baby kicks.)

**Mother:** RIGHT! A clean diaper. THAT's what you want. GOOD girl. (p. 48)

This type of exchange provides the baby with early experience with the back-and-forth of dialogue that will be important in later speech, but we must be careful about concluding that what adults do is the *most* important factor for children's developing speech. Research with some cultures, such as the Gusii people of Kenya, shows that parents in these cultures speak to their babies much less often than American parents, but their infants still develop language. In fact, when LeVine and his colleagues (1994) instructed Gusii mothers to talk and play with their babies while they were videotaped, they complied but said "it was of course silly to talk to a baby" (p. 210). However, Gusii children become as proficient with their language as American children are with English despite these different early experiences with language. There are many roads to language competence, and we must be careful not to apply one standard to all people.

### Child-Directed Speech

Think about how you talk to babies or how you see others do so. You are unlikely to approach a baby and say in a low, monotone voice, "Hello, baby, how are you today? I hope you are having a fine day." You would be much more likely to say, "Hel-LO, BAAAA-BEEEE. How are YOU today?" The special way that we talk to infants and young children was once referred to as *motherese*. However, since we have found that in most cultures, *all* adults, and children too, change the way they speak to infants and young children, this type of speech is now known as **child-directed speech** (Fernald & Morikawa, 1993). Although adults in some cultures do not usually talk to their babies, Fernald (1985) reports that this type of child-directed speech has been found in cultures in America, Europe, Africa, and Asia. Child- or infant-directed speech is quite different from the way we talk to our friends. Some people believe that these changes are harmful to infants, teaching them the wrong way to speak, but the evidence is that what we naturally do



**Laying the foundation for speech.** This mother is laying the foundation for her infant's later speech. What is the infant learning about language from this interaction?



### TRUE/FALSE #3

It is perfectly fine to use baby talk with infants.

**True.** The way that adults often talk to babies—in a high-pitched voice, with a great deal of exaggeration, and in a singsong rhythm—is actually well suited to the hearing capabilities and preferences of a baby. Babies pay attention to us when we talk this way, and doing it will not delay their language development.

**Child-directed speech** Speech that is tailored to fit the sensory and cognitive capabilities of infants and children so that it holds their attention; includes speaking in a higher pitch with exaggerated intonation and a singsong rhythm and using a simplified vocabulary.

in this way actually fosters language development (Fernald & Mazzie, 1991; Fernald & Morikawa, 1993; Rowe, 2008).

When we talk to babies we generally talk in a higher-pitched voice and exaggerate the ups and downs of our pitch, like a roller coaster. In one study, if 4-month-old babies turned their head in one direction they would hear regular adult speech. If they turned their head in the other direction they would hear child-directed speech. Most infants turned more often in the direction that started the child-directed speech (Fernald, 1985). This finding supports the idea that the reason that we speak in this silly way is because infants pay more attention to us when we do. Changing our speech in this way creates a “good fit” with the sensory and cognitive capabilities of the infant and helps hold the infant’s attention when we are talking to him (Fernald & Morikawa, 1993). In addition, the musical quality of this type of speech appears to promote early perception of the sounds, or phonemes, in a language (Lebedeva & Kuhl, 2010). An interesting variation is found among the Kaluli of Papua New Guinea. Although the Kaluli tend not to talk *to* their babies in this way, they hold up the babies to face people and use a similar type of speech to speak *for* the baby (Feld & Shieffelin, 1998). Whether we are talking *with* our baby or talking *for* our baby, either approach shows the infant that speech is a type of interaction between people.

There are very large differences in the language environments in which children develop, and these differences have consequences for the children’s later development, including their readiness to enter school. In a classic study of children’s language environment, Betty Hart and Todd Risley (1995) followed 42 families over a 2–1/2-year period, observing and recording their everyday conversation. Their sample consisted of families who were receiving welfare, working-class families, and families where the parent or parents held professional jobs. The difference in the amount of language that the children were exposed to was striking. On average, parents on welfare used 600 words an hour with their toddlers, working-class parents used 1,300 words, and parents with professional jobs used 2,100 words. Although professional parents did not initiate verbal interactions with their children any more frequently than other parents, they were more likely to respond to what their toddlers said. Parents who were professionals also used more affirmative or encouraging statements and fewer prohibitions, such as “Stop that” or “Don’t.” By the time the children were 3 years old, children in professional families had been exposed to 8 million more words on average than children in welfare families. This cumulative effect is shown in Figure 9.2.

Differences in language development by a family’s socioeconomic status (SES) continue as children get older. Vasilyeva, Waterfall, and Huttenlocher (2008) looked at the type of early sentences used by children whose parents had different levels of education. One group of parents had high school diplomas as their highest level of education, the second group of parents had college degrees, and the third group of parents had professional degrees (for example, a master’s degree, a doctorate, or a professional degree in medicine or law). They found no differences in the children’s use of *simple* sentences across groups. The children did not differ in the age at which they started producing simple sentences or in the proportion of simple sentences that they used. However, differences later emerged in the acquisition and use of *complex* sentences. Children from more educated families began producing complex sentences earlier and used them more frequently. Figure 9.3 shows the different paths of development for these two types of sentences. The authors say that children from different educational backgrounds move further apart as they grow older, and other research has shown that the disparity continues beyond the preschool years.

### Shared Attention, Gestures, and Sign Language

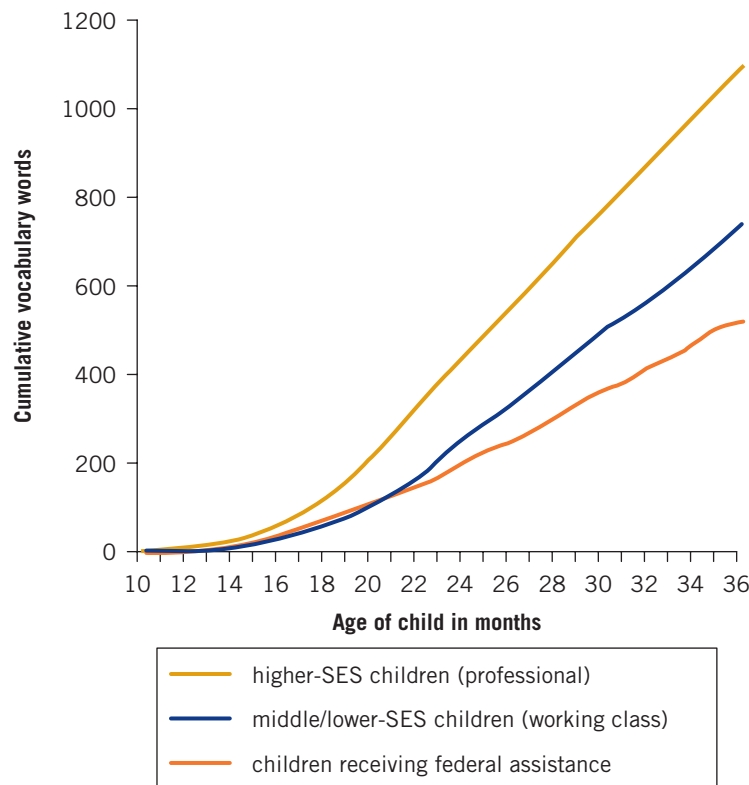
In the first months after birth, infants are focused mostly on their own bodies and on interaction with the people in their world. At about 6 months they begin to develop more interest in the objects and events around them. At this point, caregivers begin to talk about what the infant sees as both infant and caregiver gaze at objects and events. When babies look or point at what they see, adults tend to



VIDEO LINK **9.7**  
Gestures and signs

Figure 9.2

**Differences in toddlers' vocabulary.** The more words toddlers hear in their everyday life, the more they produce when they learn to speak. Children in families in which the parents are professionals hear significantly more words than children in working-class families or families on welfare, and this is reflected in the size of their vocabularies.



**SOURCE:** Hart, B., & Risley, T. R. (1995). *Meaningful differences in the everyday experience of young American children*. Copyright © 1995 by Paul H. Brookes Publishing Co., Inc. Reprinted by permission of the publisher.

label what it is for them (Goldfield & Snow, 2005). In fact, one researcher has referred to pointing as “the royal road,” if not the only road, to language development (Butterworth, 2003, p. 9).

Pointing is just one of the gestures that children use to communicate. Infants use many gestures before they can speak, and continue to use them along with speech (Volterra, Caselli, Capirci, & Pizzuto, 2005). In recent years, parents have begun to take advantage of the fact that babies use gestures to communicate before they are capable of speaking by introducing forms of sign language. Nonverbal signs are representations that have meaning, just like words. Using signs can reduce frustration for both parent and child when the child can sign what she wants instead of crying. One concern some people have is that babies will rely on these signs and this will delay development of spoken language, but research has shown that this is not true. In fact, babies taught to sign may have a slight advantage in their early spoken language learning (Goodwyn, Acredolo, & Brown, 2000).

Although most parents gesture as they talk to their infants, the amount and type of gesturing differs from parent to parent. Rowe and Goldin-Meadow (2009) found that parents in families of higher SES use gestures with their infants to communicate a broader range of meaning than parents from families of lower SES. In turn, the children from the higher-SES families used more gestures to communicate meaning by 14 months of age, and this difference in gesturing at 14 months predicted differences in the size of the children’s vocabulary at 4-1/2 years



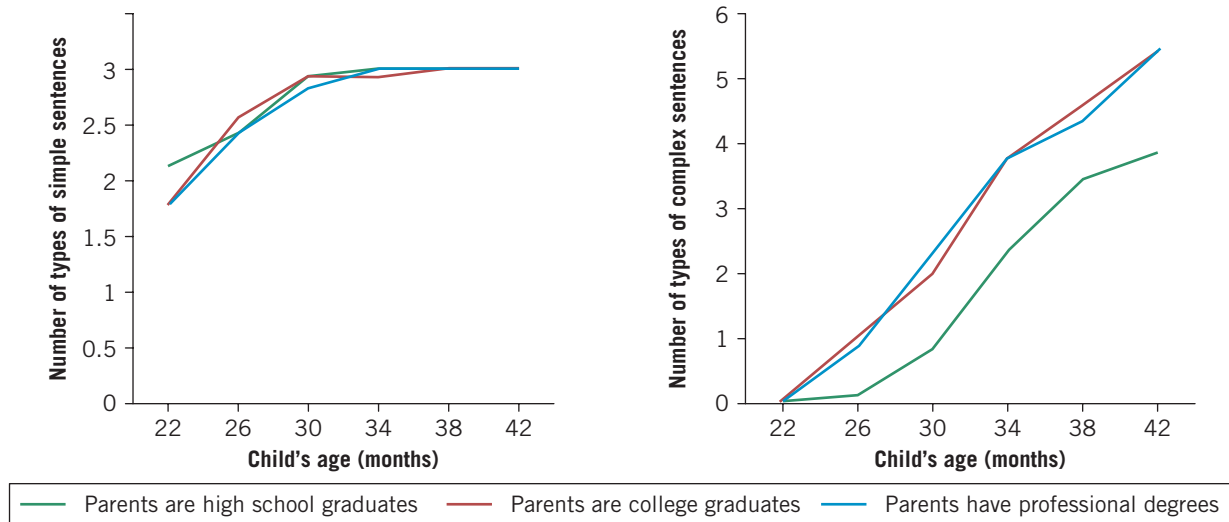
#### TRUE/FALSE #4

Teaching babies to use sign language will delay development of spoken language.

**False.** In fact, there is some evidence that learning to sign actually helps babies’ spoken language development.

Figure 9.3

**Differences in the complexity of toddlers' sentences.** There is little difference in the use of simple sentences among children from families with different levels of education (left). However, there are differences in the number of complex sentences produced by these children (right).



**SOURCE:** Vasilyeva, M., Waterfall, H., & Huttenlocher, J. (2008). Emergence of syntax: Commonalities and differences across children. *Developmental Science*, 11(1), pp. 90–91. © 2008 Wiley-Blackwell.



of age, when they were about to begin kindergarten. Gesturing may enhance language learning in several ways. First, when a child points to an object and a parent “translates” that gesture into a word by naming the object, that word enters the child’s vocabulary sooner (Rowe & Goldin-Meadow, 2009). On the other hand, just using gestures without parental naming also enhances vocabulary development. Iverson and Goldin-Meadow (2005) found that when children use a gesture, such as flapping their hands to signify a bird, the actual word *bird* tends to show up about 3 months later. The representation of the idea through gesturing may help the child learn the word meaning and eventually say and use the word.

There also are cultural differences in the use of gestures. For example, Italians tend to use many more gestures than Americans (Iverson, Capirci, Volterra, & Goldin-Meadow, 2008). However, Iverson et al. (2008) found that gesturing seemed to serve the same purpose in both populations. For both Italians and Americans, the child’s use of gestures together with speech was predictive of the development of the next stage of language development: two-word utterances.

The rate at which children develop language is related to the nature of their interaction with their parents. Children develop

**What is this toddler saying?** Toddlers use pointing as a way of communicating before they have words. We don’t know what this child is pointing at, but his mother is sure to tell him all about it.

language more quickly if their parents talk to them, but more specifically if their parents respond to their interests, for example by naming what they are actually looking at rather than something else. Parents and infants who develop the ability to engage each other in a dynamic way, following each other's leads from one focus of attention to the next, seem to foster language development most effectively (Hoff & Naigles, 2002). Let us now return to our description of the stages of language development as we look at the acquisition of words and sentences.



**Toddler signing “please.”** Although toddlers’ ability to say words is limited, this photo shows that they can learn to communicate with signs borrowed from American Sign Language.

## Toddlers’ Development of Words and Sentences

Babbling sometimes leads directly to babies’ first words. The sounds they play with while babbling may be the sounds they use for the first words they say (Menn & Stoel-Gammon, 2005). Through their interactions with caregivers, infants begin to associate words with familiar objects and people. Remember that comprehension of language precedes the production of language. While infants begin to *understand* words at about 9 months, they do not begin to *say* words, on average, until about 13 months (Tamis-LeMonda et al., 2006). First words may be made up by the baby and may not correspond to an adult word. For example, one baby referred to any motorized vehicle as a *gogo*, and *baba* meant water. When the family took him through a car wash, he created a new word combination out of these two made-up words to describe his experience. He called it a *baba-gogo*.

### Growth of Vocabulary

At 1 year, babies typically have only a few words, but by 2 years of age they generally have between 200 and 500 words (Fernald, Pinto, Swingley, Weinberg, & McRoberts, 2001). Although they initially learn new words slowly, over this second year of life they begin to learn them more quickly (Ganger & Brent, 2004). For some babies, the learning of new words explodes in what has been called a **vocabulary burst**, but for others the learning is more gradual. This is one of those aspects of development where there is quite a wide range that falls within what would be considered normal. Later in this chapter, we describe some patterns of language development that fall outside this normal range and can indicate serious problems, but language delays are not uncommon or necessarily a sign of a disorder.

How do toddlers manage to master their native language so quickly? First, it is during the second year that children begin to understand that words are symbols that stand for objects in the world (Woodward, Markman, & Fitzsimmons, 1994). This provides a strong incentive for children to acquire and use language. Second, researchers have described several assumptions and principles that children use, which seem to facilitate this process. These assumptions are called **constraints** because they limit or constrain the alternatives that the child considers when learning a new word, and this makes the process of acquiring vocabulary easier (Woodward et al., 1994). One of these constraints is the **whole object bias**. When a child sees a giraffe for the first time and someone points to the animal and says “giraffe,” the child assumes the word describes the entire animal—not its strange, long neck; not its skinny legs; and not its brown spots. Children make this assumption even when the new object obviously has two parts to it,

#### Vocabulary burst

The rapid growth of a child’s vocabulary that often occurs in the second year.

#### Constraints

Assumptions that language learners make that limit the alternative meanings that they attribute to new words.

#### Whole object bias

An assumption made by language learners that a word describes an entire object rather than just some portion of it.

**Mutual exclusivity constraint**

An assumption made by language learners that there is one (and only one) name for an object.

**Taxonomic constraint**

An assumption language learners make that two objects that have features in common can have a name in common, but that each object also can have its own individual name.

**Fast mapping**

A process by which children apply constraints and their knowledge of grammar to learn new words very quickly, often after a single exposure.

**Syntactic bootstrapping**

The use of syntax to learn the meaning of new words (semantics).

**Semantic bootstrapping**

The use of conceptual categories to create grammatical categories.

and even if one of the parts is more prominent than the other (Hollich, Golinkoff, & Hirsh-Pasek, 2007). Another constraint is the **mutual exclusivity constraint**. Children assume that there is one (and only one) name for an object. If they hear a novel word, they assume the new word describes an object that they do not already know the name for because the object wouldn't have two different names (Hansen & Markman, 2009).

The **taxonomic constraint** leads children to assume that two objects that have features in common can have a name in common, but that each object also can have its own individual name (Markman, 1990). For example, both dogs and cats have four legs and a tail and are covered with fur so they are both *animals*, but they each have some unique characteristics that distinguish between them so they also can have their own individual name.

As children apply these principles to their acquisition of new words, they can quickly learn new words, often based on a single exposure, in a process called **fast mapping**. The constraints allow the child to form an initial hypothesis, which can be tested in future situations that provide a basis for rapid acquisition of words (Pan, 2005). The first time a child sees a bus but says “truck,” someone will probably point out how a bus and a truck are different. As the child continues to see buses, the use of that particular word will be quickly refined.

English-speaking children typically add nouns to their vocabulary before they add verbs. Nouns are thought to be easier to learn because they refer to objects in the child's world and the child has realized that things should have names (Woodward et al., 1994). However, children learning other languages do not necessarily follow this pattern. In Asian languages such as Korean, nouns can be omitted. In English, nouns often appear at the end of a sentence (for example, “Get the *book*” or “Throw the *ball*”). In Korean and Japanese, verbs often appear at the end of sentences (Fernald & Morikawa, 1993). The end position in a sentence is considered more prominent and therefore easier to learn. This is one explanation for why American infants have larger noun vocabularies than infants from Asian countries at a comparable age, and why Asian infants have larger verb vocabularies.

However, grammatical differences between English and Japanese are not the only factor at work. Fernald and Morikawa (1993) observed several differences in mother-infant interactions that reflect cultural values. While American mothers tended to focus on teaching and naming objects in their speech with their infants, Japanese mothers were more interested in creating a sense of harmony in their interactions. They encouraged empathy by encouraging their infants to express positive feelings and mutual dependence by relying on baby talk more extensively and for longer duration than American mothers. Of course both groups of infants learn to use both nouns and verbs, but they learn them in a different way.

Just as infants can use fast mapping to learn new words, they can use specific types of fast mapping called **syntactic bootstrapping** to use syntax to learn the meaning of new words (Gleitman, 1990) and **semantic bootstrapping** to use conceptual categories (action words or object names) to create grammatical categories (verbs or nouns) (Johnson & de Villiers, 2009; Pinker, 1984). To pull yourself up by your bootstraps is an expression that means to solve a problem using your own resources. In this case, children use knowledge that they have in one domain of language to help them learn another domain (Karmiloff & Karmiloff-Smith, 2001). For instance, there are differences in the forms that words take that help you determine whether a word is a noun or a verb. If you were introduced to two new words—*klumfs* and *pribiked*—which would you think was a noun and which a verb? You know that we add *-s* to nouns to form a plural in English, therefore that is a strong clue that *klumfs* is a noun. Likewise, a verb can have a past tense, so the *-ed* at the end of *pribiked* is a strong clue that this is a verb. Second, where a word appears in a sentence (its syntax) provides clues to word meaning. If someone told you that the “*thrulm* progisted the car,” in English the noun usually precedes the verb, so you could assume that *thrulm* is a noun and *progisted* is a verb. If someone told you that “you have a very *glickle* smile,” you might guess that *glickle* is an adjective that modifies or describes your smile.

To see for yourself how constraints can help guide a young child's word learning, try **Active Learning: Using Linguistic Constraints**.

## Using Linguistic Constraints

You can use this activity to learn some “novel” words to see how a young child might experience learning them. In each situation, decide what you would say and name the linguistic constraint that you used to guide your decision.

## ACTIVE LEARNING

1. You know that a bat is a long, thin object, and you know that a ball is small and round. If I ask you to hand me the glumph, which object do you pick up?



Which constraint did you use to make your decision?

2. The creature with the pink hair is a lorum. When you have more than one lorum, what do you call them?



How did you know what more than one lorum is called?

3. These are both floggles, but the green one is a flinger and the purple one is a flagger.



What constraint helps you understand how these creatures are similar and how they are different?

4. This glumberg is dingling.

How do you know which of these new words is a noun and which is a verb?



5. If I tell you this is a boblabo, am I naming the creature's beak, its wings, or something else?



What constraint allows you to determine what the word boblabo refers to?

1. You know what a bat is and what a ball is, so the *mutual exclusivity constraint* leads you to assume that the new name applies to the object you do not already have a word for.
2. You used your knowledge of the general grammatical rule that you add the letter s to nouns to form a plural.
3. The *taxonomic constraint* helps you understand that both creatures can belong to the category of floggles, but because they have unique features, they also can have different names.
4. *Syntactic bootstrapping* helps you identify the form of speech (noun versus verb) by the word's placement in the sentence and the *-ing* at the end of the word that usually indicates an action verb. This helps you figure out the meaning of the word.
5. The *whole object bias* makes it more likely that you assume that a new word applies to the entire object, not just to a portion of it, like a beak or a wing.

### Answers:

### Two-Word Phrases

After children have acquired a number of words in their vocabulary, they enter a stage of language development in which there is enormous growth in understanding of word meanings and in use of more sophisticated grammatical construction (Waxman & Kosowski, 1990). At around a year and a half, children begin to combine words in phrases such as *Mommy up* or *All gone*

*kitty*. This is the beginning of their use of grammar, and it demonstrates that children create their own grammar rather than simply making mistakes in using adult grammar (Karmiloff & Karmiloff-Smith, 2001). At this stage, all children around the world use language in the same way, by including only the most basic information in what they say. For example, they may say, “Eat apple,” but they cannot say, “I’m eating an apple” or “You ate the apple.” For some children, one word, such as *allgone* or *more*, becomes a “pivot” word to which other words are attached, as in *allgone apple* or *allgone mommy*.

### Telegraphic Speech

When children begin to put three or more words together, they use the simplest combination of words that convey the meaning they intend. In the days long before instant messaging and texting, people used to send telegrams. When you sent a telegram, you would pay by the word. Therefore, you would not say, “I am going to arrive at 11:00 p.m. at the train station”; instead you might send the message “Arriving station 11 p.m.” You would leave out all the little, unnecessary words. When young children begin to put words together, they act as if they have to pay for each word, and they only use the ones necessary to get their point across. This has been referred to as **telegraphic speech**.

Whereas two-word utterances are similar around the world, when children begin to combine three or more words the ordering of the words in these simple sentences reflects the language they are hearing. For example, the order in sentences in English is very likely to be a subject, then a verb, and then the object of the verb: *The dog* (subject) *chased* (verb) *the cat* (object). English-speaking children find it difficult to produce and understand passive sentences in which this order is changed: *The cat was chased by the dog*. However, children who speak Sesotho, a language found in southern Africa, hear passive sentences frequently and can produce these forms as soon as they learn to speak (Demuth, 1990). You can try **Active Learning: The Impact of Word Order** to see whether a child you know understands passive sentences.

#### Telegraphic speech

A stage in language development in which children only use the words necessary to get their point across and omit small words that are not necessary (for example, *Go bye-bye*).



**VIDEO LINK 9.8**  
Comprehension of passive sentences

## ACTIVE LEARNING

### The Impact of Word Order

First you will need to take two pieces of paper and draw two pictures. On one piece of paper, draw a dog facing right and running. On the second piece of paper draw a cat facing right and running. Ask a child between 3 and 10 years of age to arrange the pictures to show *The dog is chasing the cat*. Then ask the child to arrange the picture to show *The dog is chased by the cat*. Does the child understand that in the second sentence, which is in the passive form, the cat is actually chasing the dog? If not, this shows that the child still understands language through the grammatical structure of subject-verb-object. Some 4-year-old English-speaking children can understand passive sentences, but many children in elementary school still have trouble with this form (Vasilyeva, Huttenlocher, & Waterfall, 2006). Compare your results with those of others in the class who tested children of different ages.

One thing parents tend *not* to do with young children is to correct their grammar explicitly. The following story helps show what effect it might have if you were to spend much time correcting young children’s grammar. In the 1970s, before the age of the computer, when people still wrote letters to each other, a young man carried on a correspondence with his girlfriend who was at a different college far away. Both of these young people were highly intellectual, as you will see. Each wrote love letters to the other. The recipient would then *correct the grammar* in the letter and send it back to the sender. You probably reacted quite negatively to this scenario, but why? Clearly, dealing with the grammar instead of the content of a love letter took all of the meaning—in this case, the romance—out of the exchange. In the same way, when a child is



trying to tell us something, we respond to the content, not the form of what he is saying. When the child says, “Me go store,” we answer, “Oh, are you going to the store?” We do not answer, “You should say, ‘I am going to the store.’” If we did, the child would be totally confused. Karmiloff and Karmiloff-Smith (2001) provide the following example of what happened when a mother tried to correct her child’s grammar:

**Child:** Daddy goed to work.

**Mother:** Yes, that’s right. Daddy went to work.

**Child:** Daddy goed to work in car.

**Mother:** Yes, Daddy *went* in his car.

**Child:** Daddy goed his car very fast.

**Mother:** Ah ha, Daddy *went* to work in his car. Say *went* to work, not *goed*. Daddy *went* to work.

**Child:** Daddy wented to work. (p. 102)

As this example shows, sometimes even when we directly try to correct grammar, it doesn’t work. Also, if you’ve ever had a parent correct your grammar while you were trying to tell him something important, you can understand a child’s frustration when a parent responds to the form of a sentence rather than to the meaning of what is said.

## Language Development of Preschoolers

By age 3, most children are putting together multiword sentences. Also, whereas younger children use only the basic forms of words, such as *I go store*, preschoolers begin to add morphemes. At the beginning of the chapter, we defined a morpheme as the smallest unit that has meaning in a language. A morpheme may be a word like *house*, *car*, or *alligator*, or it may be any part of a word that has meaning, such as *-ed*, which indicates past tense, or *-s*, which indicates a plural. As the preschooler learns to use morphemes appropriately, she no longer says “I walk home” but rather “I walked home” when she means the past tense. As we mentioned in the section on nativist theory above, when children learn to use these added morphemes, they often use them on words for which they don’t work. Interestingly, they may use both the correct and the incorrect version, even in the same sentence: *I goed to the store and then went home*.

Follow the directions in **Active Learning: Collecting a Language Sample** to look at the nature of a young child’s language development.



### TRUE/FALSE #5

If a young child says “I goed outside,” it helps develop his language skills if the parent corrects him by saying “No, you meant to say, ‘I *went* outside.’”

**False.** When children are learning to talk, adults are more likely to respond to the accuracy of what the child says rather than to correct the child’s grammar. In this case, the adult would be more likely to say, “Yes, you did go outside.” This is less likely to confuse the child and more likely to encourage further language development.

## Collecting a Language Sample

Take a 10- to 15-minute language sample of a child between the ages of 18 months and 4 years by watching the child while he or she is playing with another child or talking with an adult. Try to write down exactly what the child says. How many words does she put together: one, two, three, or more? Look at the stages of development we have described to see where this child fits in. If the child is using just single words, how does she make herself understood (for example, by using gestures)? If she does put words together, are they in the same order that we would find in adult grammar, or are there words that are left out (for example, *I am going to the store* becomes *I go store*)? Do the words the child uses have appropriate endings (for example, *kicked*, *playing*, *desks*)? Does the child overregularize and put these endings on irregularly formed words (for example, *wented*, *sitted*)? Compare your findings with those of others in your class who observed children older or younger than the child you observed.

## ACTIVE LEARNING

**Egocentric speech**

A limitation of young children's communication due to their inability to take the perspective of other people into account.



**VIDEO LINK 9.9**  
Private Speech

### Egocentric Versus Private Speech

Although their use of language is rapidly increasing, preschoolers still have some limitations to their ability to communicate with others. Jean Piaget (1973) described the inability of young children to take the role of other people in their conversations as **egocentric speech**. For example, a child may say something like “I went to that place and saw someone going round and round.” She does not realize that you have no idea what “that place” is or how someone can go “round and round” because she doesn’t understand that you don’t know everything that she knows. For Piaget, the explanation for egocentric speech is that children are not born social beings; they must learn to be social and to understand other people’s points of view. When they do, their language becomes socialized, and communication is much more effective. Schematically, Piaget described the development of speech as follows:

Presocial speech → Egocentric speech → Socialized speech

Lev Vygotsky (1962) had a very different idea about what egocentric speech was. For Vygotsky, children are born social beings, so their speech is never “presocial.” Instead, children always intend to communicate, but at some point their speech divides into two types: speech directed at other people and speech directed at oneself. In Chapter 7 we introduced the concept of *private speech*, or talking to oneself. Speech directed at other people continues to be communicative, but private speech becomes increasingly silent. Younger children talk to themselves out loud, for example, “I’m using the red crayon.” Somewhat older children more often whisper or mutter to themselves when carrying out a task. Some children may even move their mouths silently. Vygotsky said that this speech becomes internalized eventually as silent speech (“saying it in my head”) and then as thought. Schematically, Vygotsky described the development of speech as follows:

Social speech → Communicative speech  
 Social speech → Egocentric or private speech → Inner speech or thought

The research on these two points of view has tended to support Vygotsky’s point of view. Although children do, at times, engage in egocentric speech that does not take into account the needs of the listener, more often this speech is for the purpose of self-direction, as Vygotsky describes (Berk & Winsler, 1995). Private speech does not end in early childhood. When confronted with a difficult task, about one third of 17-year-olds were found to talk openly (10%) or covertly, such as mumbling or whispering (20%), to themselves (Winsler & Naglieri, 2003). Try **Active Learning: Private Speech** to see when even adults may still engage in private speech.

## ACTIVE LEARNING

### Private Speech

If you ever find yourself talking out loud when you are alone (that is, using private speech), think about what you are most likely to say to yourself. The chances are that what you will say is about tasks that you need to do, like “Oh . . . the psych assignment!” or “Almost forgot that!” These generally have to do with self-direction or organization. As adults, we usually do not vocalize in this way to ourselves, but when we are alone or attempting to do something difficult, we may.

Get a friend to help you with this activity and find a quiet place to do it. Your friend will need a desk or table to work on so he can write. Use a page from a book or a sheet of newspaper that he can write on. Tell him that you are looking at how accurately people can scan written material to find target

letters. Tell him that he should “cross out the Ts, circle the Os, and square the Ls” (the latter means that he should draw a box around the letter L) on the page you give him. Repeat these instructions a couple of times to be sure he understands (you can say it like a little rhyme) and ask him to repeat it to you a time or two to further confirm his understanding, but do not let him write it down. Tell him that you will later count how many letters he was able to mark up correctly in 3 minutes.

After you are sure your friend understands the instructions, tell him that you will sit out of the way so that you don't distract him and you will tell him when to start and when to stop. After 2 minutes, give him a 1-minute warning (to create a little more pressure on him). While he is working, listen carefully to hear whether he resorts to using private speech to help him perform the task. Kronk (1994) found that 37 out of 47 participants talked to themselves while working on a difficult cognitive task that she gave them, and that 46 out of 47 talked to themselves if others were working on the same task and talking to themselves.

### Written Language: Early Literacy

Until now, our discussion of language has focused on spoken language. In this section we introduce another very important aspect of language: the ability to understand and use written language. School is the context in which most children learn to read, write, and do arithmetic, but the groundwork for these skills is laid down throughout the preschool years. In recent years, we have given increasing attention to **emergent literacy**, the set of skills that develop before children begin formal schooling and that provide the foundation for these academic skills. When a young child picks up a book, holds it right-side-up, and turns the pages, or when the child “reads” a story by looking at the pictures or picks up a pencil and scribbles on a paper, these are all emergent literacy skills.

Research on reading typically has looked at how a child acquires specific skills such as phonetics or decoding letters within the school context, but emergent literacy is a broader concept. It looks at how children learn about reading, writing, and print material either through informal processes, such as parents reading to children before they start school, or through formal instruction they receive in school (Gunn, Simmons, & Kameenui, 1995). This approach looks at the active role the child plays in the process. It also assumes that different aspects of early literacy are developing at the same time and that these aspects are all interrelated. The process starts in infancy when the child is first exposed to books and to reading. Similar to the way that spoken language develops, the heart of this process is the interaction that takes place between an adult and the child, in this case as the adult reads to the child or tells a story. From these shared experiences the child develops an awareness of print, learns to recognize and name letters, and becomes aware of the sounds associated with different letters (Gunn et al., 1995). As parents and other adults tell stories, children also develop listening and comprehension skills, build their vocabulary, and become more comfortable using language themselves (Gunn et al., 1995). Reading to very young children serves other purposes than actually teaching them to read. Regular reading to children in the first 3 years of life has been linked to a higher level of both language development and cognitive development (Rodriguez et al., 2009; Rodriguez & Tamis-LeMonda, 2011). In 2009, half of U.S. children between 1 and 5 years of age were read to every day by members of their family (U.S. Census Bureau, 2011b). This was true for 59% of children in families above the poverty level but only 45% of those below that level.

Many adults love to read to children to expose them to books and new ideas that come from them, but Whitehurst (1992) has pointed out that no one has ever learned to play the piano by simply listening to someone else play. For this process to work at its best, the child can't just be a passive listener—the child needs to be an active participant in the process (Johnson & Sulzby, 1999). There is a specific technique known as **dialogic reading** that is particularly effective in developing early literacy skills. As the adult and child look at a picture book together, they actively talk about it. The adult engages the child in the process by asking questions and

#### Emergent literacy

The set of skills that develop before children begin formal reading instruction, which provide the foundation for later academic skills.

#### Dialogic reading

A technique used to facilitate early literacy, which involves an adult and a child looking at a book together while the adult asks questions and encourages a dialogue, followed by switching roles so the child asks questions of the adult.



**Dialogic reading.** As this father reads to his daughter and asks her questions about the story, he actively engages her in the process and lays the groundwork for emergent literacy skills.



#### TRUE/FALSE #6

Using flash cards and workbooks is the best way to ensure that a child develops early literacy skills.

**False.** Techniques such as these make the child passive. Children learn early literacy skills much more effectively when you use techniques that are interactive and that actively involve the child in the process.

encouraging a dialogue about what is going on in the story. What is essential to this process, however, is that the partners then switch roles and the child becomes the storyteller and the adult becomes the active listener and questioner (Ghoting & Martin-Díaz, 2006; Institute of Education Sciences, 2007). Dialogic reading provides the essential dimension of active involvement and practice, practice, practice that is required to develop a complex skill like reading.

In Chapter 7 you learned about Vygotsky's zone of proximal development. This concept helps explain why dialogic reading is such an effective technique. As you know, Vygotsky believed that children learn best when adults (or more skilled peers) expose them to ideas that are just a bit beyond where they are in their own development. When an adult is successful at keeping the dialogue and questioning during dialogic reading within the child's zone of proximal development, the interactions build on the child's existing skills and move the child to the next level of understanding. Techniques such as flash cards and workbooks that emphasize drill and basic skills acquisition are popular with some parents, especially those with less education (Stipek, Milburn, Clements, & Daniels, 1992). However, these techniques separate acquiring specific literacy skills from the rich context of reading and do not provide the same sort of sensitive feedback and interaction that dialogic reading can provide. While such training has had some success with low-achieving children and children with cognitive disabilities (Browder et al, 2006; Foorman, Francis, Fletcher, Schatschneider, & Mehta, 1998), most children can benefit from informal reading-related activities, such as exposure to print in the child's environment and from being read to by an adult who asks the child questions as part of that process

(Gerard, 2004). Techniques such as flash cards can improve word recognition (or what is called *sight reading*), but are not enough to improve more complex reading skills such as reading comprehension (Tan & Nicholson, 1997).

The basic technique in dialogic reading is the PEER sequence. During the interaction with the child, “the adult **P**rompts the child to say something about the book, **E**valuates the child's response, **E**xpands upon the child's response by rephrasing and adding information to it, and **R**epeats the prompt to make sure the child has learned from the expansion” (Whitehurst, 1992, para. 10). If you are looking at a book with a picture of several animals, you might prompt the child to respond by saying, “Do you see a kitty here?” If the child says, “Here's a kitty,” you can say, “Yes [*the evaluation*], and she is sitting next to a doggie [*the expansion*].” And to complete the sequence, *repeat*, “The doggie is sitting next to the kitty.” The goal is to ask questions that encourage the child to think about what she is seeing and to build her language skills in answer to your questions. Follow the directions in **Active Learning: Using Dialogic Reading** to see how you can use this approach when reading with a child.

By the age of 3 or 4, children usually can “read” familiar books by retelling stories using the pictures as cues (Johnson & Sulzby, 1999). As children gain experience with books, they begin to understand the relationship between the words on the page and the content of the story. They learn that it is the words, not the pictures, that tell the story in a book, and they learn the conventions of written language (for example, in English the text is read from the top of the page to the bottom and from left to right) (Gunn et al., 1995). Young children also learn to recognize

## Using Dialogic Reading

Using the techniques of dialogic reading is a skill and requires practice. Use this as an opportunity to read to a young child (preferably a child who is 3 or 4 years old). If you choose a book you are familiar with (perhaps a favorite book from your own childhood), you will know the story well enough that you can focus your attention on providing prompts for the child. You might want to create a little “cheat sheet” for yourself of the following prompts before you begin, because when you are first using dialogic reading, you will probably find yourself stumped from time to time about what kind of prompt to use next.

- *Completion prompts* involve leaving a blank at the end of a sentence that the child can fill in: “When the girl went to the store, she bought a \_\_\_\_\_.”
- *Recall prompts* ask the child for information about what has already been read: “Where did the little girl want to go?” or “Why was Emma feeling sad?”
- *Open-ended prompts* ask the child to describe what is happening in a picture.
- *W-prompts* are the *w*-questions that reporters use when gathering information for a story—*what, where, when, why, and how* (not a *w* word, but still important for gathering information): “What is Keisha going to do next?” or “Why is Larry excited?”
- *Distancing prompts* take the child out of the storybook to make her think about the real world: “This dog looks a lot like the dog that we saw at Aunt Cindy’s house last week. Do you remember that dog? What did you like about him?” (Whitehurst, 1992)

If you practice this technique, creating these opportunities for learning will become quite natural to you. Finding that *zone of proximal development* and pitching your comments and questions to a child at just the right level to advance the child’s understanding is what many parents, and *all* good teachers, do all the time.

the letters of the alphabet and the sounds associated with them (which is called **phonological awareness**) (Gunn et al., 1995).

## Language Development in School-Age Children

Children gradually come to understand that words are not the same as what they stand for. This understanding is the basis for **metalinguistic abilities**, in which children begin to think about language and how to use it (Pan, 2005). In the following example, 4-year-old Alexander had a specific idea about how words are formed and what they mean:

**Alexander:** *I’m not the cook, I’m the cooker, Mummy. I’m the cooker today.*  
Mother explained that the stove was the cooker.

**Alexander (furious):** No, no, no, that’s the cook, it’s me the cooker. (Karmiloff & Karmiloff-Smith, 2001, p. 80)

Alexander was sure that *-er* added to a word indicates that it refers to a living thing, not an object. He was focused on how the words are formed to express the ideas correctly.

Try **Active Learning: Metalinguistic Awareness** to see how older children start to appreciate words as words (for example, “I like the sound of the word *brussels sprouts*, even though I don’t like to eat them.”).

## ACTIVE LEARNING



VIDEO LINK **9.10**  
Dialogic reading

**Phonological awareness** Learning to recognize the letters of the alphabet and the sounds associated with them.

**Metalinguistic abilities** The abilities to think about and talk about language.

## ACTIVE LEARNING

### Metalinguistic Awareness

To see whether children at various ages understand that a word is not the same as what it refers to, try the following activity. Ask the child, “What are your favorite things?” and then ask, “What are your favorite words?” For each response to each question, ask why it is her favorite. Compare your child’s responses with those of classmates who interviewed children at different ages. Preschoolers are not likely to differentiate words from the things they refer to. They are likely to say their favorite word is *lollipop* because such candies are delicious. Older children are more likely to know the word is not the same as the thing. They may say they like the same word, *lollipop*, but their reason will be because they like the sounds it makes (Pan, 2005).

These new metalinguistic abilities allow children to use language in new ways. For example, humor takes on a new dimension, as in this example:

KNOCK KNOCK  
 Who’s there?  
 Lettuce.  
 Lettuce who?  
 Lettuce in, we’re hungry!

As we can see from this example, many jokes require a fairly sophisticated understanding of language. You won’t think the joke is funny unless you understand you have been tricked because the sounds for *lettuce* and *let us* are the same but the meanings are very different. This implies an understanding about words themselves, in this case that words we say can sound alike but indicate very different things. Adolescents with language impairments have much more difficulty understanding humor, especially when the joke relies on a word having multiple meanings (Spector, 1990).

Table 9.1 describes and illustrates some of the changes in what children find funny as they get older. As you look at these stages, think about what cognitive advances are necessary for a child to move from one stage of humor to another.

Table 9.1

**Children’s humor.** What children find funny largely depends on their stage of cognitive development, but the sense that something is inappropriate or incongruous underlies most of what we find funny. Paul McGhee (1979) describes the development of children’s humor in these stages.

Stage*	Description	Example
1 (beginning of year 2)	Incongruous juxtaposition of objects, image, or action	Holding a stuffed animal to your ear and talking into it as though it were a telephone
2 (end of year 2 through late preschool years)	Incongruous labeling of objects and events (physical activity is <i>not</i> required)	Intentionally naming objects incorrectly (for example, pointing to your nose when someone asks where your ear is)
3 (age 3)	Conceptual incongruity	A violation of the concept of an object (for example, saying that a cat says “moo,” calling a boy by a girl’s name, or drawing a bicycle with square wheels)
4 (age 7)	Multiple meanings	Using words that have double meanings (for example, “Order in the court!” “I’d like a ham on rye”; “Take a bath.” “OK, where should I take it?”)
Adolescence and adulthood	Preference for spontaneous wit and amusing anecdotes over memorized jokes and riddles	Recounting a real-life experience and emphasizing/exaggerating the silly elements; making observations that point out the absurdity of an ostensibly serious situation.

\*Note that the appearance of a new type of humor does not displace the earlier types. For example, although adolescents prefer spontaneous wit to memorized jokes, both adolescents and adults can be amused by a clever pun or play on words. If you found yourself giggling at any of these examples, you realized that even childish humor can still be amusing.

School-age children develop the ability to use words to mean something beyond their literal meaning. For example, they can use a metaphor such as *School is a ball!* or *Time is money*. They also begin to use irony or sarcasm, in which the speaker means the opposite of what he is really saying. For example, Filippova and Astington (2010) asked school-age children to respond to a scenario in which Billy helps his mom empty the dishwasher and breaks a plate. His mom says, “You sure ARE a GREAT helper!” Although 5-year-olds did not understand that the mother was not really complimenting Billy, 7- and 9-year-olds understood the sarcasm.

### Reading in School-Age Children

With regard to written language, children begin to acquire the skills of conventional literacy as they move from kindergarten to first grade. **Journey of Research: What’s the Best Way to Learn to Read?** describes the approaches and debates that have surrounded this question over the years.

## What’s the Best Way to Learn to Read?

There has been quite a debate over the years about which approach is the best one to use to teach children how to read. The two broad approaches that have been widely used are the **phonics (or basic skills) approach**, which focuses on letter-sound relationships, and **whole language instruction**, which focuses on using reading materials that are inherently interesting to the child (Education Week, 2004).

Children had traditionally learned to read using what today is called authentic literature, such as the Bible or literary classics. However, in the 1930s, American schools began using basal readers to teach reading. Basal readers relied on word recognition. They contained a limited vocabulary (a first-grade reader used only 300 words) and a great deal of repetition (Moran, 2000) so that students could easily learn to recognize all of the words. New words were added slowly and repeated frequently after they were introduced.

Perhaps you are familiar with another children’s book that uses this same look-say approach. Theodor Seuss Geisel (better known to us as Dr. Seuss) was asked by his publisher to create a children’s primer that used only 225 “new reader” vocabulary words. The result was the publication in 1957 of one of the most popular children’s books, *The Cat in the Hat* (Dr. Seuss Enterprises, 2002–2004).

However, basal readers fell out of favor in the 1970s as phonics became the dominant approach to teaching reading (Carbo, 1996).

The phonics approach is a *bottom-up approach* because it starts with basic elements like letters and phonemes and moves up to words before moving on to reading as a whole (Armbruster, Lehr, & Osborn, 2001). With this approach, children learn that words are composed of separate sounds or phonemes and that phonemes can be combined into words (for example, you would learn the sounds associated with the letters *c* and *a* and *t* before you would combine those sounds into the word *cat*). Children learn that words can be sounded out by breaking them down into their phonemes (Texas Education Agency, 2004). Remember that phonemes are not the same as letters. It is equally important that children be able to break down a word like *chat* into its phonemes *ch – a – t*. Phonics places the emphasis on building these skills through exercises and practice. The phonics approach has been shown to be effective with at-risk students when they are first learning to read (Moustafa, 2001), and phonological skills are considered by some to be the best predictor of children’s success in learning to read (Bingham & Pennington, 2007).

In the 1990s, however, the whole language approach gained favor over phonics in the educational community (Pearson, 2004). The whole language approach is a *top-down approach* that emphasizes understanding the meaning of words from the context in which they appear (Armbruster et al., 2001).

(Continued)

## JOURNEY of RESEARCH

**Phonics (or basic skills) approach** An approach to teaching reading that starts with basic elements like letters and phonemes and teaches children that phonemes can be combined into words before moving on to reading as a whole.

**Whole language instruction** A way to teach reading that emphasizes understanding the meaning of words from the context in which they appear.

**Balanced reading approach** An approach to teaching reading that combines elements of the whole language approach (which emphasizes comprehension and meaning) with elements of the phonics approach (which emphasizes decoding of words).

(Continued)

Advocates for a whole language approach draw a parallel between this way of learning to read and the way that children naturally learn spoken language (Armbruster et al., 2001). In a language-rich environment, children first learn individual words to represent objects, actions, or desires and then learn to put the individual words together into meaningful sentences. In this view, the purpose of reading is to extract meaning from the text rather than to decode individual letters, phonemes, and syllables (Gove, 1983; McCormick, 1988).

The whole language approach returned to an emphasis on authentic literature that had an inherent interest for children rather than on books built around teaching a set of reading skills. However, this change did not always sit well with teachers who knew that students benefited from instruction and who recognized that it was not enough to immerse students in literature and expect them to figure out the principles of reading on their own. Not only did reading suffer, but so did the students' mastery of subject content because many had difficulty reading textbooks (Pearson, 2004). By the end of the 1990s, the effectiveness of the whole language approach was being questioned, as much by politicians who were emphasizing accountability in schools as by educators who were critical of the negative effect this approach had on students' performance in subjects other than reading.

In 2001, the National Institute of Child Health and Human Development, together with the U.S. Department of Education, convened a panel of reading experts who were charged to survey the scientific literature on reading. The panel conducted a meta-analysis on 38 studies and reached the conclusion that there was "solid support for the conclusion that systematic phonics instruction makes a more significant contribution to children's growth in reading than do alternative programs providing unsystematic or no phonics instruction" (National Reading Panel, 2000a, Section 2, p. 45). The report almost immediately came under criticism (see Camilli, Vargas, & Yurecko, 2003; Garan, 2001; Shanahan, 2004; Yatvin, 2002).

Where do we stand today? Although there still is controversy about which approach is best, there is increasing support for a **balanced reading approach** that combines elements of both the whole language and the phonics approaches (Pearson, 2004; Stoicheva, 1999). Children need to be able to decode words, but they also need to comprehend the meaning of what they read. However, the balance between these two skills might change from one situation to another. For instance, the emphasis might be greater on phonics early in the process of learning to read and might shift gradually to more of a whole language approach as there is a greater need to read for comprehension.



#### TRUE/FALSE #7

One-third of U.S. fourth graders are not reading at even a basic level.

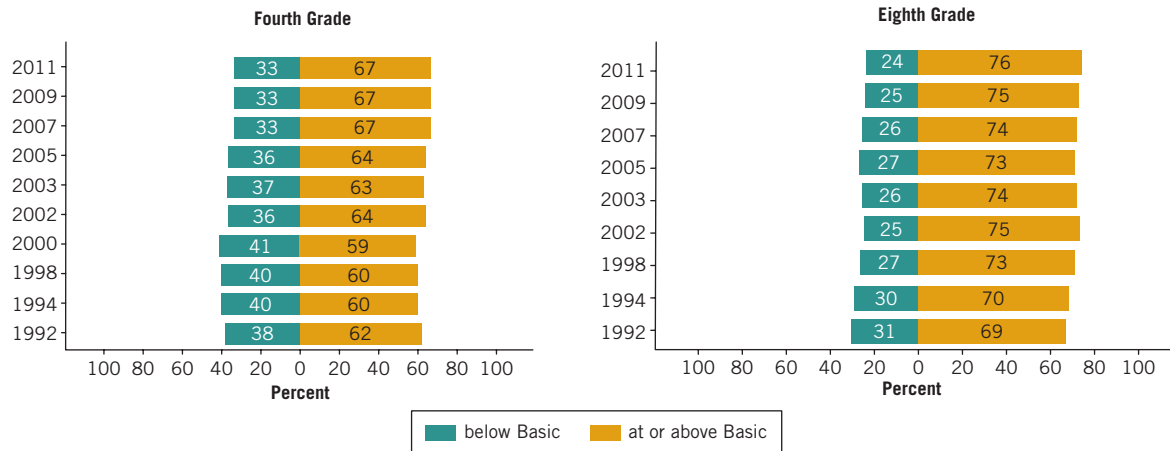
**True.** In fact, a recent national assessment of reading proficiency in over 350,000 students found that one-third of fourth-grade students were reading below a level of basic mastery.

Whichever approach—or combination of approaches—schools adopt to teach reading, there is reason for optimism that reading ability is getting better, but there still is a great deal of room for improvement. As shown in Figure 9.4, the most recent report on the results from the National Assessment of Educational Progress showed some modest gains from earlier assessments for both fourth-grade students and eighth-grade students (National Center for Education Statistics [NCES], 2011). In this sample of over 300,000 students, 33% of fourth-grade public school students were reading below what is considered a *basic* level (partial mastery of prerequisite knowledge and skills), 67% were reading at or above the basic level, 34% were reading at or above a level considered *proficient* (solid academic performance), and 8% were at an *advanced* level (superior performance). Among the eighth graders tested, 24% were below the basic level of skills, 76% were at or above the basic level, 34% were at or above proficient, and only 3% were considered advanced. Although a number of groups showed some gains, there remained a gap between genders (with girls outperforming boys) and between ethnic and racial groups. Changes in reading achievement between 1992 and 2011 are shown in Figure 9.4.



Figure 9.4

**U.S. reading achievement levels.** The charts below show that reading proficiency has increased between 1992 and 2011 at both fourth and eighth grades. Be sure to note, however, that even in 2011, 33% of fourth graders and 24% of eighth graders were unable to read at even a basic level for their age.



**SOURCE:** U.S. Department of education. Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1992, 1994, 1998, 2000, 2002, 2003, 2005, 2007, 2009 and 2011 Reading Assessments.

## Writing Skills

Even very young children love to take a crayon or marker and “write” a letter or story. The earliest writing skills (similar to what we saw for the development of reading skills) are basic: Children understand that writing moves from left to right (in English-speaking countries), from the top of the page down, and that it is meant to convey information. As their fine motor skills improve, they can now begin to write recognizable letters. Figure 9.5 is an example of how writing skills develop in young children. Remember from Chapter 6 that children develop their fine motor skills as they develop motor control that moves down their arms to their fingers. Children love being able to write their own names and often master this skill even before they enter school. Early writing is another skill in which phonological awareness plays an important role. Children will sound out familiar words and they often begin to invent their own spelling of words based on how the words sound (Johnson & Sulzby, 1999). The results may initially be incomprehensible—for example, a child might write *train* as *chran*—but this first writing is the basis for further learning about spelling and writing. Contrary to what some adults think, using invented spelling does not slow down or prevent a young child from learning conventional spelling. In fact, it can even help them with the task of learning to read (Sénéchal, Ouellette, Pagan, & Lever, 2012).

In the early elementary grades, children begin to learn and apply conventional spelling rules (such as adding the suffix *-ed* to a word to form the past tense) and to learn more about the typical patterns of occurrence of certain letters in their written language (Kemp & Bryant, 2003). The eventual goal is for the process of spelling to become automatic (Rittle-Johnson & Siegler, 1999) so that the retrieval of information on how to spell a word is very quick and very accurate.

However, writing is more than correctly shaping letters on a piece of paper or stringing words together. We use writing to communicate our ideas, so writing also must include composition skills. Children in the early elementary grades may write about a topic by simply tying together a series of statements that describe the facts (McLane & McNamee, 1990), but there is an



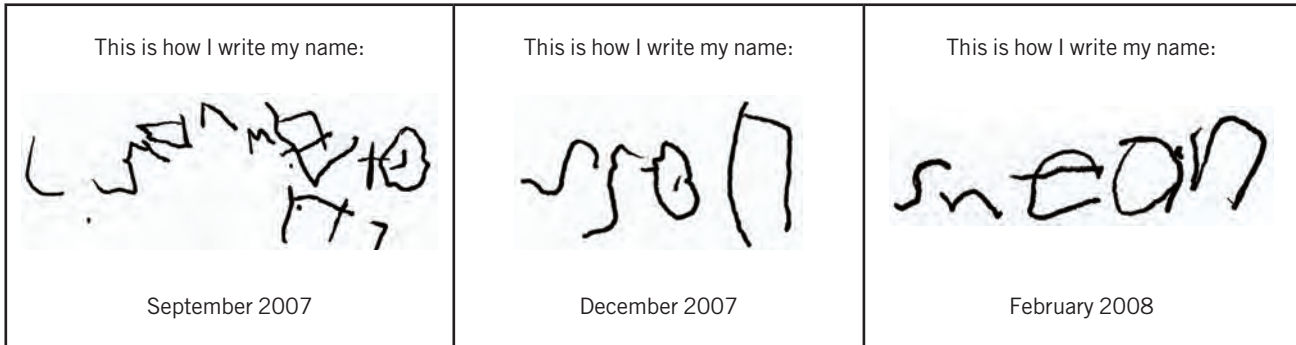
### TRUE/FALSE #8

When young children use spelling that they have “invented” (rather than conventional spelling), it slows down their ability to learn how to spell correctly.

**False.** Using phonetic (or invented) spelling does not slow down or harm a child’s ability to learn to spell correctly and may help the child learn to read.

Figure 9.5

**Early writing.** This writing sample from a prekindergarten child shows how much progress is made in just a few short months. Children take great pride in learning how to write their names.



**SOURCE:** Karen Cox © 2010, www.prekinders.com. Reprinted with permission.

#### Knowledge telling

A style of writing (typical of younger children) in which the writer proceeds with little or no evidence of planning or organization of ideas, with the goal of telling as much as he knows about a topic.

#### Knowledge transforming

A style of writing (typical of older children and adolescents) in which the goal is to convey a deeper understanding of a subject by taking information and transforming it into ideas that can be shared with a reader so that the reader understands and learns from those ideas.

important difference between **knowledge telling** (what younger children do) and **knowledge transforming** (what adolescents and adults do). When you rely on knowledge telling, you proceed with little or no evidence of planning or organization of ideas (Bryson & Scardamalia, 1991) with the goal of telling as much as you know about the topic you are writing on. In knowledge transforming, however, the goal becomes to take information and transform it into *ideas* that you can share with your reader so that the reader understands and learns from them. It attempts to convey a deep understanding of the subject. However, the fact that teenagers are capable of doing this does not mean that they necessarily do it.

## The Language of Teenagers

The language of teenagers can sound quite a bit different from that of many adults. In one sense adolescent speech becomes more adult-like in that it becomes increasingly complex. Sentences are longer, and the grammar is more complex. However, adolescents are also more likely to use slang or made-up words, especially when talking among themselves. They may do this for fun or to bond with a particular group, or simply to identify with being an adolescent. Teens often change the meaning of a word to its opposite: *That's sick* comes to mean *it's really good* (Karmiloff & Karmiloff-Smith, 2001). Shortcuts may be developed. The very polite *Hello, how do you do?* becomes *'sup?* Adolescent slang sometimes catches on with the wider society and becomes part of how everyone talks (Ely, 2005). We were going to include a list of teen slang words here but realized that they would likely be outdated by the time this book was published. Instead, if you are not far beyond adolescence yourself, think about which words you use with your friends but not with older people, like your parents. Do you have any idea about the origin of those words? Were you using different words when you were in high school or middle school? Is the slang you use particular to the area of the country in which you live or to a particular group to which you belong? Different regions of the country and different subgroups within the country develop their own particular slang. (Teens from Nebraska are less likely than teens from California to use slang pertaining to surfing.)

In recent years, teen language has also been influenced by electronic communication, such as instant messaging and text messaging. As communicators try to make interactions as efficient as possible, they have developed shorthand methods, such as substituting the well-known *LOL* for *laugh out loud* or using *u* instead of *you*. For example, a conversation might proceed as follows (Wikipedia.com):

SUP (what's up?)

NMU (not much, what about you?)

AAS (alive and smiling)

P911 (parents coming into room alert)

G2G (gotta go)

Adolescents are more likely than either older or younger individuals to use text messaging (Drouin & Davis, 2009). Although there has been some concern expressed about whether the continual use of the abbreviations that are typical of text messages would negatively affect a young person's ability to spell or write Standard English, this does not appear to be the case (Varnhagen et al., 2010). When a group of college students who were regular users of "text speak" were compared to other college students who were not, there was no significant difference between the groups on tests of their literacy level or ability to correctly spell common text speak words (Drouin & Davis, 2009). What is interesting, however, is that both frequent users and those who did not frequently text *thought* that texting would hurt their ability to use Standard English. These shortcuts do occasionally sneak into students' written school papers, so it is important for students to learn when it is appropriate to use them and when it is not.

University and business leaders alike are concerned about the number of high school graduates who do not have good writing skills. A survey conducted in 2004 by the National Commission on Writing gathered information from the human resource directors of 120 major American companies. Among the findings that emerged from the survey was the fact that one half of the respondents said that they take writing into consideration when hiring an employee (especially for salaried employees) and that an applicant who writes poorly written application might not be considered for any position. They also reported that two thirds of salaried employees have some responsibility for writing as part of their job and that communicating clearly plays a role in promotion and retention. One respondent to the survey succinctly said, "You can't move up without writing skills" (p. 3). The National Commission on Writing concluded that employees' writing



### TRUE/FALSE #9

Students who do a lot of texting do not differ from students who do not in their ability to spell or use Standard English.

**True.** "Text speak" does not seem to hurt the ability of teens who use it to spell or write correctly. They do, however, have to be careful not to use text speak when they should be using Standard English for their writing (such as when they do school papers).



**Teen communication.** Many adolescents use their cell phones to text their friends. Although texting uses a lot of abbreviations and special terminology, it fortunately doesn't seem to interfere with adolescents' ability to use Standard English.

deficiencies cost American businesses as much as \$3.3 billion a year. Although teens may have their own ways of talking and writing, when they enter the business world, they need to have a good set of language and writing skills if they expect to be successful.

## Bilingualism and Bilingual Education

Learning to speak a language is a complex cognitive task, so learning to speak two different languages is even more cognitively complex. For this reason, parents sometimes wonder whether being bilingual is so demanding that it will hurt a child's overall cognitive development. Fortunately this does not appear to be the case. Many people around the world speak more than one language, and a growing body of research on bilingualism indicates that parents do *not* need to worry about having their children learn two languages at the same time at an early age (Bialystok & Viswanathan, 2009; Hakuta & Garcia, 1989; Kovács & Mehler, 2009; Sorace, 2006). Although there is evidence that bilingual children have smaller vocabularies in each language than monolingual children (Bialystok & Craik, 2010; Bialystok, Craik, Green, & Gollan, 2009), they reach language milestones at approximately the same age (Petitto et al., 2001). Learning a second language at a young age makes it more likely that the child will speak it without a detectable accent (Asher & Garcia, 1969) and will be proficient at using the language (Johnson & Newport, 1989). However, just as

we saw that there is no clear evidence for a critical period in learning a first language, not all research indicates that there is an early and critical period for acquiring a second language (Bongaerts, 2005). There are a variety of individual factors, such as motivation, imitative ability, and working memory capacity, which may play a role along with the age of acquisition of the second language (Birdsong, 2006). Recent research has shown that the same parts of the brain are used for learning language at any age, but when learning a second language those same parts may be used less efficiently than they were for using the first language, reflecting increased effort the brain must use for that second language (Stowe & Sabourin, 2005).

Some have suggested that bilingualism is an advantage for cognitive development, and there is evidence that bilingual children and adults may have advantages in some areas of cognitive function, particularly the area of executive control (Barac & Bialystok, 2012; Bialystok, 2011). You will remember from Chapter 7 that executive control includes the ability to inhibit a response when necessary and the ability to be cognitively flexible and to shift focus from one task to another (Diamond, 2006). Bialystok and Viswanathan (2009) reported that bilingual 8-year-old children demonstrated more skill than monolingual children on tasks that required inhibitory control and cognitive flexibility. Interestingly, the bilingual children in this study were children in Canada and India who all spoke English but who spoke a variety of second languages, including Cantonese, French, Hebrew, Mandarin, Punjabi, and Telugu. Differences in executive function even appear in preverbal infants who are from bilingual homes. After infants from monolingual and bilingual homes had



**Bilingual classrooms.** Many children in U.S. classrooms speak more than one language. The American educational system has adapted to this diversity through a variety of programs designed to teach English as a second language (ESL).

learned to anticipate an event based on a verbal clue, when the clue changed the infants from bilingual homes were able to more easily shift to a new response (Kovács & Mehler, 2009).

Research also has found that bilingual children have an advantage in solving problems that require the child to ignore irrelevant or misleading information to solve the problem correctly, have greater mental flexibility and greater creativity, are better at scientific problem solving, and have better concept formation (Andreou & Karapetsas, 2004; Bialystok, 2001; Hakuta, 1987; Hakuta & Garcia, 1989). In other words, they have metalinguistic skills that allow them to understand and think about language in a more advanced way, including having an understanding of the relative nature of language (that is, that the same object can be called by any of several different names—an object called *table* in English can also be called *mesa* in Spanish). However, on other measures there are no differences between monolingual children and bilingual children, and in some cases monolingual children have the advantage (Bialystok, 2007).

Thus far we have focused on children who have already achieved competence in two languages. However, in the United States there are many children for whom English is not their first language, and it is not the language spoken in their home or neighborhood, but when they get to school, they are generally expected to understand and speak English. There has been much controversy about what is the best way to handle this situation and help ensure that these bilingual learners will be successful in school. See **Journey of Research: Bilingual Education—Sink or Swim?** for a closer look at how our approach to teaching children who are learning English has developed over time.



### TRUE/FALSE #10

When a young child learns two languages at the same time, the extra effort it takes to learn the second language slows down the child's general cognitive development.

**False.** Young children actually can learn two languages simultaneously without great difficulty. Contrary to the belief that doing this might hurt the child's cognitive development, there is some evidence that in some ways it actually enhances it.

## Bilingual Education—Sink or Swim?

Research on bilingual education is embedded in political, philosophical, and social contexts. At times our educational system has accommodated bilingualism, at times there has been opposition to it, and at still other times it has been largely ignored (Crawford, 1995). This *laissez-faire* attitude resulted at least in part from the assumption that non-English speakers would want to be assimilated into the great American melting pot and would strive on their own to quickly learn English so that the educational system wouldn't need to do anything special to facilitate this.

In the 18th and 19th centuries, immigrants often lived in their own communities and ran their own schools in which instruction was given in their native language (Public Broadcasting Service [PBS], 2001). However, by the end of the 1800s, the tide had started to change. For instance, Native Americans were forbidden to be taught in their native language, and laws were passed that required that classes be taught in English (Crawford, 1995; PBS, 2001). This

trend was amplified when the United States entered World War I and concerns about the loyalty of non-English speakers provoked hostility against people who spoke German (PBS, 2001). Eventually this hostility became hostility against the use of any minority language in schools. By the mid-1920s, virtually all bilingual education in public schools had been eliminated (PBS, 2001).

The tide changed again in the 1960s against a backdrop of desegregation in public schools and the civil rights movement (Crawford, 1995). Another important factor in this shift in attitude toward bilingualism was the sharp increase in the number of immigrants arriving in the country. By the mid-1960s, immigrant populations increasingly demanded instruction in their native language and the incorporation of their culture into the curriculum.

In response, the federal government passed the Bilingual Education Act of 1968, which provided \$85 million over 3 years to create an equal educational opportunity for nonnative

(Continued)

## JOURNEY of RESEARCH

(Continued)

speakers, even if that meant that different learning environments had to be provided for them (Petrzela, 2010). The legislation argued that children were being deprived of an education if they were taught in a language they did not understand (Cromwell, 1998a). A second goal of this legislation was to recognize and respect nonnative students' cultures and to recognize the cultural pluralism in our society (Cromwell, 1998a).

In the years that followed, the need for language services for children who were not native English speakers continued to grow. By the 1980s, 40% of the U.S. population consisted of minority-language speakers (PBS, 2001), and the 2000 U.S. Census found that one out of every six school-age children spoke a language other than English in the child's home

(National Clearinghouse for English Language Acquisition and Language Instruction Educational Programs [NCELALIEP], 2006). Today children with limited English proficiency are the fastest-growing segment of the U.S. school-age population (NCELALIEP, 2006).

This increase in the number of nonnative speakers, together with a growing dissatisfaction about the progress that the students were making in learning English in bilingual classes, provoked a backlash that resulted in several pieces of state legislation in the 1980s and 1990s that again eliminated bilingual education or prohibited expenditures for classes in any language other than English (PBS, 2001). It is against this shifting backdrop of social change that research on bilingual education has been conducted.

#### Immersion programs

Programs in which English language learners are taught academic subjects in English.

#### Transitional bilingual education programs

Programs in which English language learners receive some instruction in their native language while they also receive concentrated instruction in learning English.

#### Developmental bilingual programs

Programs in which English language learners receive instruction in core subjects in their native language until they have the language skills to be instructed in English.

#### Dual language programs

Programs in which children who are native speakers of English and children who are not work together in a classroom where both English and the children's other native language are used.

Programs designed to teach English to children who are not native speakers have taken a variety of forms in the United States. Some of the most common types of programs (Cromwell, 1998a) include the following:

- **Immersion programs** in which the students are taught academic subjects in English, with teachers tailoring the language they use to the current language level of their students.
- **Transitional bilingual education programs** in which the students receive some instruction in their native language while they also receive concentrated instruction in learning English. The goal of transitional programs is to prepare the students to *transition* to regular classes in English as soon as possible so they do not fall behind their peers in content areas such as math, science, and social studies (Ovando & McLaren, 2000).
- **Developmental bilingual programs** that build on students' skills in their native language while they learn English as a second language. Students initially receive instructions in the core subjects in their native language but receive instruction in art, physical education, and music in English. As soon as they have sufficient skills in English, English is then used for instruction in the core subjects as well (Genesee & Cloud, 1998). Students typically remain in these programs longer than in traditional transition programs, but they continue learning English throughout their time in the program.
- Another program model that is used less frequently than other alternatives is a **dual language program** in which children who are native speakers of English and children who are nonnative speakers work together in a classroom where *both* majority and minority languages are used (Lindholm-Leary, 2000). This type of program requires highly trained and skilled teachers who can support the development of both languages in their students in a language-integrated classroom. Proponents of this approach emphasize how it promotes bilingualism and academic excellence for both groups of language learners and prepares the students for life in a multicultural world (Lindholm-Leary, 2000).

It has been difficult to determine which approach might be considered best or most effective. Many programs are not pure forms of the approaches we have just described, so it becomes difficult to compare and evaluate programs that are actually hybrids of several

approaches (Cromwell, 1998b; Guglielmi, 2008). The intended goal of such programs has shifted from time to time so the assessment of program effectiveness must change with the goal. For instance, if the goal is to assimilate recent immigrants into the American language and culture, an immersion approach fits well with that goal. On the other hand, if the goal is to promote multiculturalism, a dual language approach fits well with that goal (Ginn, 2008). A committee of the National Research Council (1997) has recommended that rather than trying to find a one-size-fits-all solution, research needs to identify a range of educational approaches that can be tailored to the characteristics of the children in a specific community, while taking into account local needs and the resources available to support the language program. Hakuta and Garcia (1989) summed up this debate by saying, “There is hardly any dispute over the ultimate goal of the programs—to ‘mainstream’ students in monolingual English classrooms with maximal efficiency. The tension has centered on the specific instructional role of the native language: How long, how much, and how intensely should it be used?” (p. 376).



**VIDEO LINK 9.11**  
Immersion programs

## Language Disorders

### Communication Disorders

We have described the normal or typical pattern of language development in children, but it is also important to remember that there is a good deal of variability in the age at which children reach the various milestones that fall within the normal range. Some children surprise us by racing through the milestones sooner than we might expect (usually to parents’ great delight), but others lag behind (no doubt causing their parents some concern). One of the most important things that parents can do is to pay attention to how their child is progressing. If they have questions or concerns, they should talk to their pediatrician and perhaps have the child evaluated by a speech and language specialist. In most cases they will likely get reassurance that their child’s language development is in that normal range, but if a problem is identified, early intervention efforts are important and can be very effective.

The *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 2000) identifies several communication disorders that affect children’s ability to listen, speak, and use language in their social communications and in school:

- A child with **expressive language disorder** has a more limited vocabulary and has difficulty using tense correctly, recalling words, or producing sentences of the length and complexity that would be expected of a child of that age.
- A child with **phonological disorder** has difficulty producing sounds or using sounds correctly for his age (for example, he substitutes one sound for another).
- **Receptive-expressive language disorder** causes both the child’s receptive and the child’s expressive language development to be substantially below his performance on a standardized measure of nonverbal intelligence. In addition to the problems described above for an expressive language disorder, a child with receptive-expressive language disorder has difficulty with receptive language (that is, with understanding words or sentences).
- *Stuttering* is a disorder in which the child has difficulty with fluency and time patterning of speech (this includes repeating sounds or syllables, pausing within a word, pausing in speech, or repeating whole words).

Again, any child (or adult, for that matter) might show any of these language problems from time to time, but we wouldn’t consider this a disorder unless the problems are

**Expressive language disorder** A disorder involving a limited vocabulary and difficulty using tense correctly, recalling words, or producing sentences of the length and complexity that would be expected of a child of that age.

**Phonological disorder** A language disorder in which the child has difficulty with producing sounds or using sounds correctly.

**Receptive-expressive language disorder** A disorder in which a child has difficulty with both expressive language (using words and language) and receptive language (understanding words and sentences).

persistent, the child's language is substantially below what would be expected for a child of the same age, and the problem interferes with other aspects of the child's life, such as her ability to communicate with others or her performance in school. Because some studies have found that language disorders are associated with difficulties in parent-child interaction and in social-emotional development, it is important that we identify and treat them as early as possible so that we don't let a whole set of secondary problems develop in addition to the language difficulties (Desmarais, Sylvestre, Meyer, Bairati, & Rouleau, 2008).

## Autism Spectrum Disorders

As described in Chapter 6, autism is a disorder that is characterized by difficulties with social interaction, problems with verbal and nonverbal communication, and repetitive behaviors with a strong need for sameness in the environment. Language development plays a central role in diagnosing this disorder, so we return to talking about autism in this chapter, with a specific focus on the communication aspects of the disorder.

Remember that autism includes a range of conditions that runs from autism disorder at the severe end to pervasive development disorder (not otherwise specified) and includes a much milder condition called **Asperger's disorder** (American Psychiatric Association, 2000). Autism is not usually diagnosed before age 3, but one of the earliest indications that something may be wrong is that the child does not reach regular milestones in language development, such as using single words by 16 months or combining two words by 2 years of age (National Institute of Mental Health [NIMH], 2009). The National Institute of Mental Health (2009) describes a number of ways in which language development or the use of language is different for children along the autism spectrum (see also the National Institute on Deafness and Other Communication Disorders, 2008). As we look at these, you are likely to develop a better understanding of the complexity of this developmental disorder.

Some autistic children may not babble or make meaningful gestures, such as pointing to things that they want, or they may not respond to their name, but other children with autism spectrum disorder coo and babble normally although their language doesn't develop from that point forward. Some autistic children remain mute throughout their lives, but others develop some language, although they may do it at an unusually late age (between 5 and 9 years) (NIMH, 2009). The child may know a number of words (in some cases even having an unusually large vocabulary) but may use single words over and over again or be unable to combine the words he does have into meaningful sentences. Some autistic children have **echolalia**, a condition in which they repeat what they hear (like an echo). For example, a parent asks a child, "What do you want, Johnny?" and the child responds, "What do you want, Johnny?" rather than answering the parent's question. Children may do this when they are first learning a language, but the echolalia persists for children on the autism spectrum. Autistic children also may reply to questions in a way that is not responsive. For instance, if you ask a child if he would like something to drink, he might count from one to five for you. Children on the autism spectrum may respond in social situations with "scripts" for what they should say or do. For example, the autistic child may introduce herself by saying, "Hello, my name is Josephine," even though you have met this child many times before and know that her name is Josephine.

Autistic children also have difficulty with many of the skills that are part of what goes on in our typical day-to-day conversations with other people. Try **Active Learning: Observing Conversation Skills** to sharpen your understanding of the skills necessary to carry on an effective conversation.

### Asperger's disorder

A disorder at the mild end of the autism spectrum, marked by a relatively high level of functioning but repetitive routines, inappropriate social and emotional behavior, and uncoordinated motor movements.

### Echolalia

A condition seen in autistic children in which they repeat what has been said to them instead of responding appropriately.



## Observing Conversation Skills

You may not have thought about how many social skills we use when we engage in a conversation. All of these skills work together to give meaning to what we are saying and to ensure that we are actually communicating by exchanging information when we talk to each other.

Find some place where you can watch people who know each other engage in conversation. A cafeteria on your campus or a student study lounge would be a good place to do this. If you do this activity in class, you can have some students be partners for this exercise by engaging in a conversation while other students conduct the observations. To reduce some of the awkwardness, give the students a topic for their conversation. It can be something as simple as discussing the weather last week, something that has happened on your campus recently, or their opinion about whether we should ask for paper or plastic when we shop for our groceries (the topic doesn't matter very much, as long as it is not too controversial because we want to observe a conversation, not an argument).

As they talk, for 3 to 5 minutes try to carefully observe all the things that they do to sustain that conversation and to communicate effectively. When you have a list, compare it to the description of conversational clues that follow in the text. How many of them did you notice and include in your notes?

In the United States, conversation is often marked by eye contact between the individuals who are talking. They may smile and nod when they agree with each other or frown if they do not agree. What we say is usually tied to our facial expression and our body language because we are integrated human beings, and all those pieces go together in a way that makes sense. Most of the time, one person waits for the other person to finish talking before adding something to the conversation. They take turns speaking and usually don't interrupt or speak over the other person. They also try to keep the conversation going by adding new information to what has already been said or by asking questions about what the previous speaker has said. They keep an appropriate distance between each other (and what is appropriate depends on the culture you are in and the intimacy of the relationship). Friends often sit closer together than strangers or classmates who are talking to each other. Facial expressions, gestures, and body language fit the topic of the conversation. If the speakers are joking, their faces reflect their amusement, and they may throw their heads back and laugh out loud. If they are discussing something distressing or serious, they may hunch over, bite their nails, or play with their fingers. If someone is sharing a concern or talking about a disappointment, the other person may reach out to touch his arm or back in consolation. If the topic changes from one thing to another, one of the speakers probably indicates that a new topic is being introduced into the conversation by saying something like "By the way . . ." or "What do you think about . . . ?" We also usually clearly indicate to the person we are speaking to when the conversation is over. We say something like "I've got to get to class now" or "I'll see you later" to show that the conversation has reached a conclusion.

## ACTIVE LEARNING



**Nonverbal communication.** Communication involves much more than what we say. Our expression, body language, and gestures also convey meaning. What do you understand about these girls' conversation just from seeing them, without hearing what they are saying?



**Building language skills.** This special education teacher is coaching an autistic boy to use sign language to compensate for the problems he has with spoken language.



**Reading can be a struggle.** Many children take great pleasure in being able to read, but for a child with a learning disability, reading can be a day-to-day struggle. Children with identified learning disabilities can receive special services in their schools.

As you read through the previous paragraph, the content probably seemed very commonsense and familiar. It may have been *so* familiar that you didn't even make note of some of these things if you carried out the observation in the **Active Learning** feature. Now think for a moment how difficult it would be to have a conversation if the person you were speaking to didn't look you in the eye when you spoke, didn't respond to what you said or responded in a way that didn't relate to what you had just said, didn't show any facial expressions or use any gestures, or used expressions and gestures that were inappropriate for what he was saying (NIMH, 2009). These are all difficulties with the pragmatics of language that are frequently seen in autistic children.

When autistic children fail to develop language or gestures (such as sign language) to express what they want or need, they may resort to simply grabbing what they want or screaming (NIMH, 2009). As they grow up and increasingly realize they have difficulty understanding others and making themselves understood, they may become depressed or anxious (NIMH, 2009). Anger, depression, and anxiety are not symptoms of autism itself. They are secondary consequences of living with this disorder and the challenges it brings with it.

## Language-Based Learning Disabilities

As you learned in Chapter 8, *learning disability* is a broad term that encompasses a number of different types of learning problems. Here we focus on learning disabilities that include difficulties with understanding and/or using spoken or written language (National Institute of Neurological Disorders and Stroke, 2011a). About 3% to 10% of school-age children have difficulties with decoding written language, the hallmark of developmental dyslexia (Duff & Clarke, 2011). These problems often co-occur, so it is not unusual, for instance, for a child with delayed speech development to have more difficulty than other children learning how to read. These disabilities can be very frustrating for children.

Reading and writing involve complex sets of skills that need to work together perfectly. When you read, you need to simultaneously “focus attention on the printed marks and control eye movements across the page, recognize the sounds associated with letters, understand words and grammar, build ideas and images, compare new ideas to what you already know, [and] store ideas in memory” (NIMH, 1993, p. 4). This process requires the interaction and coordination of the visual, language, and memory

portions of the brain. Children with **dyslexia** have particular difficulty distinguishing or separating the sounds in spoken words, which creates problems when they are learning to spell and read written words (Council for Exceptional Children, 2009; NIMH, 1993). Dyslexia primarily involves difficulty with word-level reading and spelling skills rather than difficulties with comprehension (Snowling & Hulme, 2011). The writing disorder **dysgraphia** includes trouble with spelling, handwriting, or expressing thoughts on paper. Writing also is a complex skill because it involves the complex coordination of vocabulary, grammar, hand movements, and memory (NIMH, 1993).

Knowledge of letter-sound correspondence and phoneme awareness are the best predictors of a child's ability to learn to read (Duff & Clarke, 2011; Snowling & Hulme, 2011). Consequently training children to map printed words on to phonemes is central in successful attempts to intervene. However, because the nature and severity of the condition is variable, it may be necessary to target specific reading skills or combine approaches, especially for the most disabled readers (Snowling & Hulme, 2011). Evidence is accumulating that systematic training in phonics can improve a child's reading skills, although the size of the effect may not be large (Browder et al., 2006; Duff & Clarke, 2011), and even when reading accuracy improves, there may continue to be long-term problems with reading fluency and spelling (Snowling & Hulme, 2011). Early identification, before an avoidance of reading becomes firmly established, and training that is embedded in a comprehensive literacy curriculum can benefit many children with reading difficulties.

**Dyslexia** A learning disability in which individuals have difficulty distinguishing or separating the sounds in spoken words, creating problems with spelling and reading.

**Dysgraphia** A learning disability characterized by difficulties with writing, including trouble with spelling, handwriting, or expressing thoughts on paper.

## Conclusion

Language is essential to the human experience. We communicate our ideas, feelings, and needs with language, and we use language to understand the world. Infants and toddlers around the world seem to go through the same stages in learning language, and by age 3 or 4, most are able to speak fairly clearly to those around them. Language development does not end in preschool. All four aspects of language (phonology, syntax, semantics, and pragmatics) continue to develop and become more complex and sophisticated through adolescence. Children must also learn to decipher written language if they live in a literate society. When children have difficulty with language development, as in the case of autism or learning disabilities, it is imperative that parents, teachers, and other professionals take all necessary steps to ensure that children achieve the highest level they can attain. We saw that there are approaches that can be used to support the child's language development or communication skills. Language is just one aspect of a child's cognitive development, but it is a central one in most societies around the world.

## CHAPTER SUMMARY

1. What are the four different aspects of language that researchers study?

Language includes **phonology** (the sounds that make up the language), **syntax** (the grammar of the language), **semantics** (the meanings of words), and **pragmatics** (how we use language in social situations to communicate).

2. What are the basic theories about how children develop language?

Behaviorism (B. F. Skinner) emphasizes the role of reinforcement in the environment as a way to motivate and shape children's language development, but social cognitive learning theory (Albert Bandura) emphasizes the role

of imitation of the language that children hear. **Nativism** (Noam Chomsky) emphasizes the role of biology by explaining language development as a result of our brain's inborn capacity to learn language. **Interactionism** brings these ideas together by stating that children's biological readiness to learn language must work together with their experiences with language in their environment to bring about language development. **Cognitive processing theory** is a new approach that emphasizes the "data crunching" capacity of the human mind, suggesting that infants statistically analyze the speech they hear in order to figure out language.

### 3. What parts of the brain are specialized for language?

Two areas of the brain are particularly important for language development and use: **Broca's area** is important for the production of speech, and **Wernicke's area** is important for understanding and making sense out of speech.

### 4. What are the stages of language development from prenatal through preschool?

Children move through stages of language development, but there is a good deal of variability from child to child in the age at which each stage appears. Before they can use words, infants communicate by crying, cooing, babbling, and gesturing. Infants and toddlers begin verbalizing by using one word at a time (usually nouns in English-speaking cultures) and then create primitive sentences when they put two words together. When children make sentences that contain only the essential words (for example, *Mommy ride car*), this is called **telegraphic speech**.

**Fast mapping** allows children to add words rapidly to their vocabulary (often after a single exposure), and **syntactic bootstrapping** and **semantic bootstrapping** help this process. Preschoolers make multiword sentences using grammar that is very close to that of adults, but they continue to make mistakes because they tend to apply rules in cases where the rules won't work (called **overregularization**).

### 5. What are egocentric speech and private speech?

**How are they similar, and how do they differ?**

Piaget describes **egocentric speech** as an inability of young children to take the role of the person listening to them. Eventually speech becomes social as the child learns to take into account the listener's point of view. According to Vygotsky, private speech (like egocentric speech) is spoken out loud, but it is not used for social communication. Instead, private speech is used to direct one's own actions, and it eventually is internalized and becomes silent thought.

### 6. What is metalinguistic ability, and how is it demonstrated in middle childhood?

**Metalinguistic ability** develops as children begin to think about language in and of itself. With this ability, they can understand that a word is different from what it represents.

One outcome is that they are able to understand jokes that are based on changing word meanings.

### 7. How is teen language different from language in children and adults?

Adolescents' speech is more complex in grammar and in subject matter than children's speech, and it differs from adult speech in the use of slang. Teen language is affected by the kind of communication used in technology such as text messaging.

### 8. How do children learn to read and write?

Development of reading: **Emergent literacy** refers to the set of skills that young children develop before formal instruction in reading. Adults can use **dialogic reading** to talk with young children about the books they are reading together to build a variety of language skills. Once children enter school, they may be taught to read using one of the following approaches: (a) **phonics**, which starts with basic elements like letters and phonemes and teaches children to combine elements into words before moving on to reading as a whole; (b) **whole language instruction**, which emphasizes understanding the meaning of words from the context in which they appear; and (c) **balanced reading**, which combines features of the whole language approach with elements of the phonics approach.

Development of writing: Young children move from scribbling to forming letters and then words. In school they may move from invented spelling to learning the rules of conventional spelling, until writing becomes an automatic process they don't have to think about. When writing, young children string ideas together with little organization, called **knowledge telling**, but adolescents become capable of writing to convey ideas and deeper understanding of a subject, called **knowledge transforming**.

### 9. What are some effects of being bilingual as a child?

**What types of education programs are used for children who do not speak English?**

Bilingual children do not generally have any difficulties associated with their use of two languages, and there is some evidence that they may have some advantages over monolingual children, such as showing more advanced executive functioning. The four types of bilingual education programs are (a) **immersion programs**, which teach students only in English; (b) **transitional bilingual education programs**, which teach students in their native language while providing concentrated instruction in learning English; (c) **developmental bilingual programs**, which initially teach core subjects in the students' native language and other instruction in English, and then switch to all English as the students' skills develop; and (d) **dual language programs**, in which children who are native speakers of English and children who are nonnative speakers work together in a classroom where *both* languages are used. In

practice, however, programs seldom are pure examples of these types. Instead they may incorporate various elements of these program types into a new program.

**10. What are the types of language disorders that children may have?**

Disorders specific to language comprehension and production: Types of language disorders include **expressive language disorder**, in which the production of language is significantly delayed; **phonological disorder**, which involves difficulty with producing sounds correctly for the child's age; and **receptive-expressive language disorder**, which involves both difficulty with understanding

words or sentences and problems with producing and using language. Stuttering is difficulty with fluency and time patterning of speech.

Disorders on the autism spectrum: Children with **autism** often have serious difficulties with speech that can range from a lack of any language to **echolalia** (in which children repeat what is said to them instead of responding).

Learning disabilities related to language: Learning disabilities that specifically involve language include **dyslexia** (difficulty with distinguishing or separating the sounds in spoken words, creating problems when learning to spell and read written words) and **dysgraphia** (difficulty with spelling, handwriting, or expressing thoughts on paper).



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