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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 he is referring to a specific thing, and we don’t have to see that object. 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 may influence the way we think about and understand our experiences.

Test Your Knowledge

Test your knowledge of child development by deciding whether each of the following statements is true or false, and then check your answers as you read the chapter.

1. True/False: Infants are born with a preference for listening to their native language.
2. True/False: 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.
3. True/False: It is perfectly fine to use baby talk with infants.
4. True/False: Teaching babies to use sign language will delay development of spoken language.
5. True/False: If a young child says, “I goed outside,” the child’s parent will be most likely to say, “No, you meant to say, ‘I went outside.’”
6. True/False: Using flash cards, repetition, and word drills is a good way to ensure that a child develops early literacy skills.
7. True/False: By the time they reach eighth grade, fewer than one third of students in the United States are reading at or above their grade level.
8. True/False: When young children use spelling that they have “invented” (rather than conventional spelling), it slows down their ability to learn how to spell correctly.
9. True/False: 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.
10. True/False: Most children who are learning disabled have average or above-average intelligence.

After defining some basic aspects of language that we will use throughout the chapter, we will describe some of the theories that try to explain the amazing process by which we acquire and use language. We will 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 will look at the topic of bilingualism. We will examine how learning to speak more than one language affects a child’s language development and how our educational system is trying to deal with the increasing number of bilingual children in the classroom. Finally, we will end the chapter with information about disorders that can interfere with children’s language development.

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 to their listeners and to accomplish their goals. We will 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 that signals differences between words. For example, cat and bat are clearly distinct words in English, as indicated by the different beginning sounds. 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 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 theory.

According to B. F. Skinner (1957/1991), language is also shaped through operant conditioning, or 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

Noam Chomsky (1968) developed a theory that proposes that the human brain is innately wired to learn language. 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 adequate 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 that rule, 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 the irregular words follow the regular rules is called overregularization. Children are creating these words from their own understanding of grammar, and 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 in a variety of cultures has found that mothers 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 is enough to explain how children learn language. Another point of 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 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’ language learning was not related to the level or nature of social engagement between them and their mothers. Rather, the toddlers they studied 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 still develop language as evidence that language development is not 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, “The elephant is drinking water,” how would you figure out that **elephant** is a separate word rather than **antis**? One answer is that infants’ brains are constantly “crunching data”; that is, they are figuring out statistically how likely it is that certain sounds will follow each other (Saffran, Johnson, Aslin, & Newport, 1999). For example, when we hear **ele**, it is most often followed by **phant** or **vator**, while the entire word **elephant** can be followed in a sentence by many different sounds. 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:

*Bupadapatubitutubupadadutabapidabupada*

Did you discover **bupada**? This is just a brief sample, but 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. As infants cannot be asked what a word is, they have been tested by seeing how long they listen to nonsense “words” (such as *bupada*) and how long they listen to random syllables after exposure to a stream of sounds such as that shown above. The consistent result is that they listen longer to the nonwords, which are newer and more interesting to them, than to the more familiar “words” (Aslin, Saffran, & Newport, 1998). Therefore, these researchers argue that our brains are designed like computers to automatically use statistical probability to pick out the words in a stream of speech.

Language and the Brain

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, leaving out the “little words.” 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. 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 tarripoi, 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)

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). Also, language functions may be distributed differently in women than in men. When researchers watched brain function using an fMRI (functional magnetic resonance imaging), they found that men responded to rhyming tasks with left-hemisphere activity, while women responded with activity from areas in both the left and the right hemispheres (Shaywitz et al., 1995).

Stages of Language Development

In this section we will describe the development of language, with particular focus on the ability to talk. We purposely de-emphasize the ages at which these developments occur because children differ enormously in the rate at which they develop language. Later in this chapter we will discuss when a caregiver should be concerned about language delays.

Prenatal Development

Of course babies do not speak before they are born, yet 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 its 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 the Dr. Seuss book 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 (by sucking a pacifier in a certain way) the sound of their mother reading The Cat in the Hat rather than a new poem they had never heard before. 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. 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 3–5 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. However, crying is not pleasant for adults to hear, so we are motivated to do what it takes to make it stop. 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.

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 sounds they can make are limited because of aspects of their physiology, so they sound a bit like doves “cooing.” At this stage they also begin 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 4–6 months old and begin to combine those sounds (baba, daga) when they are 6–8 months old (Sachs, 2005). 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 their 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), ahm (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 /t/ 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.

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

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). 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-AEEEE. How are YOU today?” 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 in this way actually fosters language development (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. Although adults in some cultures do not tend to 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. 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). 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.

**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 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 (Voltera, 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 socioeconomic status (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 4½ years 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

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**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.

**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.

**Video Link 9.5**

Sign language.
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 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.

**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. When infants as young as 6 months were shown side-by-side videos of their mother and their father but heard either the word *mommy* or the word *daddy*, they spent more time looking at the parent who was being named (Tincoff & Jusczyk, 1999). However, this behavior did not transfer to other men and women, so it appears that for the infant the word *mommy* refers to a specific woman, not all women. 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 will describe some patterns of language development that fall outside of 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, 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) (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 example, children might figure out syntax through an understanding of the meanings of words (semantics), or they might figure out word meanings through the placement of the words in a sentence (syntax). Children use their knowledge of the various aspects of their native language as clues (Johnson & de Villiers, 2009).

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—*klumps* 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, so 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 proceeds 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**.

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**ACTIVE LEARNING**

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.

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 floogles, 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 glumbug 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?**

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**Answers:**

1.  You know what a ball is and what a ball is, so you assume that a new word applies to the entire object, not just a portion of it, like a beak or a wing.

2. The sentence and the plural ending of the word help you determine 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.

3. **Syntactical 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.

4. **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.

5. **Lexical constraints** help you understand that different words can belong to the same category of creatures. Since you know that glumbugs can have pink hair, you assume that a new word applies to the creature’s beak, its wings, or something else.
Two-Word Phrases

After children have acquired a number of words in their vocabulary, they enter a stage of “rapid syntactic and semantic development” (Waxman & Kosowski, 1990, p. 1463). 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.

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 cat was chased by the dog. 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. Older children understand that this order can be changed. 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. Steven Pinker (1999) has suggested that we have two different mechanisms, one mechanism for learning words that follow regular rules and a different mechanism for learning words that are irregular so that their form must just be memorized rather than figured out. This position is very controversial, because other researchers maintain that only one mechanism is needed to do both tasks (McClelland & Patterson, 2003).
Follow the directions in Active Learning: Collecting a Language Sample to look at the nature of a young child’s 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, 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.

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 2½-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 (*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 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.
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
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).

Educational levels of parents: Group 1 (high school graduates), Group 2 (college graduates), Group 3 (professional degrees).

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 a 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 how even adults may still engage in private speech.
Part III. BUILDING BLOCKS OF DEVELOPMENT

ACTIVE LEARNING

Private Speech

We sometimes get a glimpse of the use of private speech as adults. If you ever find yourself talking out loud when you are alone, 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. 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 there was someone else who was working on the same task and talking to him- or herself.

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

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.
place between the parent and the child, in this case as the parent reads to a 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 tell stories, children also develop listening and comprehension skills, build their vocabulary, and become more comfortable using language themselves (Gunn et al., 1995). However, 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 that is particularly effective in developing early literacy skills, which is known as dialogic reading. 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 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-Diaz, 2006; Institute of Education Sciences, 2007).

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. Anything too far beyond that is just going to go over the child’s head because it is much too advanced, and anything that is below the child’s own level of performance won’t contribute to his learning because it is what the child already knows. 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 upon the child’s existing skills and move the child to the next level of understanding. This also helps explain why research has generally found that techniques such as flash cards, workbooks, and repetitive drills do not have a beneficial effect on the development of early literacy skills for children with average abilities (Gerard, 2004; Stipek, Milburn, Clements, & Daniels, 1992). Such approaches 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.

The basic technique in dialogic reading is the PEER sequence. During the interaction with the child, “the adult Prompts the child to say something about the book, Evaluates the child’s response, Expands upon the child’s response by rephrasing and adding information to it, and Repeats 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.

Being able to come up with prompts that keep the dialogue going is at the heart of this process. Whitehurst (1992) provides examples of five types of prompts that can be used:

- **Completion prompts** involve leaving a blank at the end of a sentence that the child can fill in. When a child correctly completes the sentence, it helps her understand the structure of language, which will later help her learn to read. If you say, “I think I’ll go to the store and buy a ______,” you need a noun to correctly complete the sentence, but if you say, “When I ride my bicycle, I go very ______,” you need an adverb to correctly complete this one.
- **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?” helps the child pay attention to the plot of the story and how it unfolds. This type of prompt also aids in memory development.
- **Open-ended prompts** ask the child to describe what is happening in a picture. They are different from completion prompts because the child isn’t responding to a specific question that
you have posed. The child can describe anything she sees and finds interesting. This gives the child the opportunity to use her expressive language and to pay attention to detail.

- **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). If you ask the child what the character in the story is going to do next, why the character is excited, or where she thinks the character will go next, you are helping develop her thought processes while building vocabulary.

- **Distancing prompts** take the child out of the storybook to make her think about the real world. If you are reading a story about a dog, you might stop to ask the child about an experience she has recently had with a dog. You might say something like “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?”

From this description, you can see how reading becomes an active rather than a passive process for the child when you use these techniques. 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. Dialogic reading provides the essential dimension of active involvement and practice, practice that is required in order to develop a complex skill like reading. Follow the directions in *Active Learning: Using Dialogic Reading* to see how you can use this approach when reading with a child.

**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 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. If you practice this technique, however, 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.

By the age of 3 or 4, children usually can “read” familiar books by retelling stories using the pictures as cues (Johnson & Sulzby, 1999). At around this same age, they begin to experiment with writing in scribbles. 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 the letters of the alphabet and the sounds associated with them (which is called **phonological awareness**) (Gunn et al., 1995). Children can pick up this information either through formal instructions or incidentally from being exposed to print information. After children have learned to write the letters of the alphabet and have made connections between letters and their sounds, they often begin to invent their own spelling of words (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, as we will discover in the next section.
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!”).

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.

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.

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 Love is war. They also begin to use irony or sarcasm, in which the speaker means the opposite of what he is really saying; Oh my, how beautiful that outfit is, with the big tomato stain on the front. A younger child might believe that you seriously like the design she’s made with the tomato sauce.
Part III. BUILDING BLOCKS OF DEVELOPMENT

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.

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.

<table>
<thead>
<tr>
<th>Stage*</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (beginning of year 2)</td>
<td>Incongruous juxtaposition of objects, image, or action</td>
<td>Holding a stuffed animal to your ear and talking into it as though it were a telephone</td>
</tr>
<tr>
<td>2 (end of year 2 through late preschool years)</td>
<td>Incongruous labeling of objects and events (physical activity is not required)</td>
<td>Intentionally naming objects incorrectly (for example, pointing to your nose when someone asks where your ear is)</td>
</tr>
<tr>
<td>3 (age 3)</td>
<td>Conceptual incongruity</td>
<td>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)</td>
</tr>
<tr>
<td>4 (age 7)</td>
<td>Multiple meanings</td>
<td>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?”)</td>
</tr>
<tr>
<td>Adolescence and adulthood</td>
<td>Preference for spontaneous wit and amusing anecdotes over memorized jokes and riddles</td>
<td></td>
</tr>
</tbody>
</table>

* 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.

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. They had an inherent interest in being able to read these books. However, in the 1930s, American schools began using basal readers to teach reading. Basal readers relied on nonphonemic sight-reading. 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 before you would combine those sounds into the word cat). Children also learn that the process can be reversed and words can be sounded out by breaking them down into their phonemes (Texas Education Agency, 2004). 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). You can try some exercises using this approach in Active Learning: Phonics Can Be Fun.

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). 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 (see Chapter 3 to review how this research methodology is used) 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, 2000, 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 (Education Week, 2004; 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.

Marie Carbo (1996) has suggested that after 70 years of research we should recognize that no single approach to learning how to read is likely to be most effective for every child. Which approach works best can largely depend on the learning style of the child who is learning to read. She points out that children who have a visual, tactile, and global reading style will enjoy the whole language approach and will be able to learn from it. On the other hand, these children may find phonics both boring and confusing. However, children who are analytic learners and have strong auditory styles can do very well in a phonics program. For these students, a whole language approach may feel too disorganized and haphazard. As with many things in the field of development, finding the right fit is often what works the best for children.
Phonics Can Be Fun

Descriptions of phonics-based reading programs sometimes sound like they are all practice and drill, but activities related to phonics can be fun, as well as educational, for children. The game of “Let’s Pretend” helps children focus on the sound of words. You can play this game with an elementary school-age child or group of children. First ask the children to decide on a place where they want to go. Then have them try to name objects that they would take with them that start with the same letter as the place they are going (Texas Education Agency, 2004). For instance, if they want to go to the beach, they could say they want to take a ball, a blanket, and a bottle of water.

Another word game adapts the nursery rhyme “Humpty Dumpty” and lets the children fill in words that rhyme at the end of each sentence. This is an example taken from the Texas Education Agency (2004, handout #2):

Teacher: Let’s make up our own “Humpty Dumpty.” (The teacher then provides the first line of the rhyme.)

Humpty Dumpty sat on a pear.
Humpty Dumpty had ________________ (a child might say curly hair).
Humpty Dumpty rode a ________________ (bear).
Humpty Dumpty went to ________________ (the fair).

The children fill in the blanks with any word that rhymes and makes sense in the sentence. This game could be adapted to use with groups. The first group to come up with an appropriate word scores a point.

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. 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 (Lee, Grigg, & Donahue, 2007). In this sample of 350,000 students, 34% of fourth-grade public school students were reading below what is considered a basic level (partial mastery of prerequisite knowledge and skills), another 34% were reading at the basic level, 24% were scored as proficient (solid academic performance), and 7% were at an advanced level (superior performance) (Lee et al., 2007, p. 16). Among the eighth graders tested, 27% were below the basic level of skills, 43% were at the basic level, 27% were scored as proficient, and only 2% were considered advanced (p. 34). That means that across the two grade levels, about two thirds of the sample was reading at or below the basic level. Although a number of groups showed some gains, there remained a gap between genders (with girls outperforming boys) and between ethnic and racial groups. State-by-state changes from 2005 to 2007 are shown in Figure 9.4.

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 “spell” them phonetically. 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 (Ouellette & Senschal, 2008). When kindergarten children were trained “to increase the sophistication of their naturally occurring invented spellings” (p. 904), a process that ordinarily occurs as children move toward learning conventional spelling, this group showed more advanced invented spellings and reading of words than children without this training.

Figure 9.4

Changes in reading comprehension scores on the National Assessment of Educational Progress. This map shows a state-by-state comparison of changes in the scores of 350,000 fourth- and eighth-grade students who were assessed in 2005 and 2007. Although there was some improvement, 30 states did not show a change in scores for students in either grade. Compared with 2005,

- 4 states and jurisdictions (District of Columbia, Florida, Hawaii, and Maryland) improved at both grades (shown in teal);
- 13 states (Alabama, Alaska, Georgia, Indiana, Iowa, Kansas, Nevada, New Jersey, New Mexico, Massachusetts, Mississippi, Pennsylvania, and Wyoming) and Department of Defense schools improved at Grade 4 only (shown in red);
- 2 states (Texas and Vermont) improved at Grade 8 only (shown in orange);
- 2 states (North Dakota and Rhode Island) declined at Grade 8 (shown in white); and
- 30 states showed no significant change at either grade (shown in gray).

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.** Phonetic (or invented) spelling does not slow down or harm a child’s ability to learn to spell correctly.
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 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 with each other. 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 came out. 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)

Recent research has found that 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. 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 a 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 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). Children who simultaneously learn two languages reach language milestones at approximately the same age as children who are monolingual (Petitto et al., 2001). However, there is not strong research support for the idea that bilingualism gives children an across-the-board advantage in cognitive performance. Ellen Bialystok (2001), an expert in bilingualism and second-language acquisition, has said that “broadly based statements about intellectual superiority are probably excessive and unsupported” (p. 188), although there is evidence to support the idea that bilingual children have some advantages over monolingual children in some specific cognitive processes.

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). Although not all research indicates that there is an early and critical period for acquiring a second language (Birdsong & Molis, 2001), research on brain function has shown that children who learn two languages from a very young age use the same parts of the brain to process both languages, while children who learn a second language in adolescence use a different part of the brain for that second language (Blakeslee, 1997). There also is growing evidence of enhanced executive control in bilingual children. You will remember from Chapter 7 that executive control functions include an 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) recently 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 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).

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. However, 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.

**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). At this time, several states had laws that allowed children to be taught in schools in the language of their parents at the parents’ request. 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 entry into World War I raised concerns in the United States about the loyalty of non-English speakers and 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 comprised a substantial part of the school-age population in some parts of the country. These immigrant populations—Chinese families in San Francisco, Cuban families in Miami, and Chicano families in Texas—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 supplemental funding for instruction in native languages (PBS, 2001). Under this legislation, children with limited English proficiency were seen as a special needs population that required additional services. 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 non-native 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 non-native 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.

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 non-native 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).
There has been a great deal of controversy about these various approaches to helping English language learners or children with limited English language proficiency learn English. Consequently it is 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). As noted above in the Journey of Research, the intended goals of the programs have shifted from time to time to reflect changes in the social and political context. 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.

The debate about how to best educate children who are not native speakers of English will continue within our schools because these children will continue to be a sizeable part of our school-age population. This means that there will be arguments for and against all of the approaches currently used, but 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).

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 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 in social interactions 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

Autism was described in Chapter 6 as a pervasive development 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], 2009b). The National Institute of Mental Health (2009b) 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.

**Video Link 9.9 Autism.**

**Asperger’s disorder**

A pervasive developmental 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.

**Building language skills.** This special education teacher is coaching this autistic boy to use sign language to compensate for the problems he has with spoken language.
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, 2009b). 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.

### 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 “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 “I’ve been meaning to tell you…” 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 “Well, it was interesting talking to you today” or “I’ve got to get to class now” or “I’ll see you later” to show that the conversation has reached a conclusion.

As you read through the previous paragraph, the content probably seemed very common-sense 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, 2009b). 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, 2009b). As they grow up and increasingly realize they have difficulty understanding others and making themselves understood, they may become depressed or anxious (NIMH, 2009b). 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.

Diagnosing a child as autistic is a conclusion that has great consequences for the child and the family, so we want to make this decision with great caution. Although we typically don’t label a child as autistic until he is 3 years or older, there is a growing body of evidence that symptoms of autism are apparent from much younger ages (Kalb, 2005; NIMH, 2009b). While we don’t want to rush to judgment in making a diagnosis, there is good reason to identify this condition as soon as we can because the optimal intervention involves at least 2 years of intensive early intervention during the preschool years (Filipek et al., 1999; National Institute of Neurological Disorders and Stroke [NINDS], 2008). Making a diagnosis involves using neurologic assessments as well as cognitive and language testing (NIMH, 2009b). These assessments are typically done by a team of specialists, which can include a psychologist or psychiatrist, a neurologist, a speech therapist, and/or other professionals who work with children with autism spectrum disorders (NIMH, 2009b). Based on their evaluation, the child’s strengths and weaknesses can be identified, and this information can be used to develop a treatment plan that is tailored to the needs of the individual child. An effective treatment plan will be designed to target the array of symptoms that are associated with autism, including the impaired social interactions, language difficulties, and behavioral problems.
Although there is no cure, early and appropriate intervention can bring about substantial improvement in these areas (NINDS, 2008). For instance, highly structured programs that include intensive skill-oriented training can help a child develop social and language skills that she lacks (NINDS, 2008). Under the Individuals with Disabilities Education Act (IDEA) services are provided to families with children under the age of 3 who have special needs. Although each state decides for itself which agency will be responsible for providing these services, all states use specialists who are trained specifically to work with young children (NIMH, 2009b). Together with the family, they develop an Individualized Family Service Plan (IFSP) that describes the services that will be provided (including services to the family, not just the child), and this plan is reviewed at least once every 6 months.

Learning Disabilities

As you learned in Chapter 8, learning disabilities is a broad term that encompasses a number of different types of learning problems. Here we will focus on learning disabilities that include the ability to understand or use spoken or written language (NINDS, 2007). 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 may be very frustrating for children. Think for a moment about that uncomfortable feeling that goes along with having a word you are searching for on the tip of your tongue, and you will be able to relate to the frustration that a child with a language disorder can experience on a regular basis (American Speech-Language-Hearing Association [ASHA], 1997–2009).

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 words (Council for Exceptional Children, 2009; NIMH, 1993). As children move through the grades, the reading that they are expected to do shifts from recognition of letters and words to much more complex tasks that involve concept formation and reading comprehension. Some children with dyslexia may not be identified until the reading demands reach this level. 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).

Learning disabilities are most often considered to be a result of damage to the brain, which can occur prenatally when the structure of the brain is being laid down, through a lack of oxygen to the brain during the birth process itself, or after birth due to environmental events such as exposure to toxins, severe malnutrition, or even an injury to the head (NIMH, 1993). However, the specific reason for a child’s learning disability is often not known. Research...
on the possible causes of learning disabilities continues because a better understanding of causes will help us do a better job of preventing learning disabilities in the future or develop more effective interventions.

Although learning disabilities have their roots in early development, they usually are not identified until children reach school age and need to begin developing their reading and writing skills. Children develop these abilities at different rates, so we should never jump to the conclusion that a child has a learning disability if she is slower to read and write than other children. The child may need better instructions or more practice and time to develop these skills (National Center for Learning Disabilities [NCLD], 2010). However, if the child’s difficulties persist, then it is time to ask the school for an evaluation and assessment. Other causes for the child’s difficulty must be ruled out before we make the diagnosis of a learning disability. We have to eliminate sensory impairment (for example, vision loss or hearing impairment), serious emotional disturbance, cultural differences, or insufficient or inappropriate instructions as possible causes of the child’s difficulty (NCLD, 2010). We also need to rule out mental impairment. Children who are learning disabled are not mentally retarded, and most children who have a learning disability have average to above-average general intelligence (ASHA, 1997–2009; NCLD, 2010).

The National Center for Learning Disabilities (2010) estimates that 2.8 million children in the United States have a specific learning disability, and the Council for Exceptional Children (2009) reports that more than 50% of the students in special education have a learning disability. Once a child has been diagnosed with a learning disability, the federal IDEA requires that appropriate services be provided. Collaboration among classroom teachers, support specialists, and parents is essential for an optimal outcome for the child.

Children with learning disabilities face more than academic challenges in the classroom, so parents and teachers need to be sensitive to these other sources of stress in the child’s life. Because day-to-day expectations in the classroom are difficult for this child, it can have a negative effect on the child’s self-esteem (Alexander-Passe, 2006; NCLD, 2010). Children with learning disabilities also may lack interpersonal and social skills that make it difficult for them to make and keep friends, leading to feelings of loneliness (NCLD, 2010). Because children who are different from other children can become a target for bullies, teachers and other school personnel need to be particularly vigilant to protect these children from harm to their physical well-being, self-esteem, and psychological well-being.

Children on their own try to find ways to cope with their challenges. Some underreact by withdrawing from the situation (for example, avoiding school, trying to avoid being called on in class) or by becoming extremely anxious (Thomson, 1996). Others overreact by acting out (for example, becoming the class clown, being aggressive toward other children, engaging in deviant or delinquent behavior) (Alexander-Passe, 2006; Thomson, 1996). Although these are coping mechanisms (and we all use them), they are not productive ones. Withdrawing from a stressful situation may temporarily ease your anxiety, but it doesn’t solve your problem. Acting up gets you attention, but it doesn’t help you meet your challenges.

Problems that arise in the elementary school years can persist and become worse as children with learning disabilities move into adolescence (Gerber et al., 1990). Recent research that looked at how adolescents with dyslexia coped found some important and interesting gender differences (Alexander-Passe, 2006). This research found that girls were more likely to try to find ways to make themselves feel better about the situation. For instance, they were more likely than boys to try to avoid the tasks at hand or to distract themselves from their problems by socializing with friends rather than studying. In contrast, boys were more likely than girls to attack the situation directly in an attempt to deal with it. They showed persistence and hard work and tried to analyze their past attempts to figure out what went wrong and could be corrected in the future. Similar patterns of gender differences in coping have been found in other research (Greenglass, 2002; Nolen-Hoeksema, 1987; Ptacek, Smith, & Dodge, 1994). In this

**TRUE/FALSE**

10. Most children who are learning disabled have average or above-average intelligence.  

**True.** Learning disabilities are not the same thing as retardation. They involve an inability of the brain to process certain specific types of information, but overall intelligence is not the issue.
study, being dyslexic had a greater effect on the academic and general self-esteem of girls than it had on the self-esteem of boys, and girls reported higher levels of depression.

One recommendation, based on these results, is that in addition to the educational needs of students with dyslexia, these students also need special attention to help improve their self-esteem and deal with the emotional fallout from the challenges they face. With appropriate help, many students who have learning disabilities are able to enroll in college and are successful in getting their degree. Many colleges offer support services, such as untimed tests or notetaking services, for students with identified disabilities. You may want to explore the services available on your campus for such students.

A particularly encouraging note comes from another recent study (Seo, Abbott, & Hawkins, 2008) that followed a group of students with learning disabilities from age 10 into young adulthood. Across a number of outcomes, including postsecondary school attainment, rates of employment, amount of earned income, and receiving public assistance, there were no significant differences between students with learning disabilities and their peers except that the former were more likely to be receiving public aid at age 21 (but not at age 24). While not all research on students with learning disabilities has found such positive adult outcomes (for example, Zadok-Levitan & Bronz, 2004), when young people are proactive in dealing with their disability, set goals for themselves, are self-aware and emotionally stable, and have good social support, they can be highly successful (Goldberg, Higgins, Raskind, & Herman, 2003; Raskind, Gerber, Goldberg, Higgins, & Herman, 1998; Seo et al., 2008).

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. As we saw from the description of communication disorders, there are a number of ways in which the language development of an individual child can differ from the typical path that most children follow. However, we also 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.

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 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 multword 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 they 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 being affected by the kind of communication used in new 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 and self-control.

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 non-native speakers work together in a classroom where both languages are used.

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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