

Chapter 10

Language acquisition: how children (and others) learn language

Learning Objectives

- Describe the role of brain development in language acquisition.
- List and explain the major theories of language acquisition.
- Describe how children acquire phonology.
- Describe how children acquire syntax and morphology.
- Describe how children acquire the lexicon.
- List the stages of first-language acquisition and briefly describe each.

- List and explain the different forms of bilingualism.

- Explain the two main hypotheses about how young children simultaneously acquire two or more languages.
- Analyze how second-language learning is different from first-language acquisition.

Learning to be fluent in a foreign language is one of the most difficult intellectual accomplishments an adult can achieve. But for a child, language learning is almost effortless. In fact, it happens with no formal training and can happen with very little input. It occurs at a predictable age and in a predictable sequence. The result of about 2 million years of hominin evolution, language learning is human beings' unique adaptation to living in a group. One of the reasons that anthropologists are interested in language acquisition is that children learn the culture of their group as they are learning their language. The words that are taught to children guide them in learning what is important in the culture. (See [Chapter 9](#), "Language enculturation: three examples"). Language acquisition is also closely tied to the evolution of the large human brain.

Language and the brain

The **R-complex** is the part of the human brain that is similar to the reptilian brain.

The **limbic system** is the part of the human brain that is similar to the mammalian brain.

The **neocortex** is the largest part of the human brain; it is where the language skills reside. This is the area of the brain that contains **Broca's area** and **Wernicke's area** (see [Chapter 1](#)).

The **corpus callosum** is the main connection between the two hemispheres of the brain; it facilitates communication between them.

The human brain is a complex organ that evolved from the simpler brains of ancestral animals. Inside the human brain is the **R-complex**, or the reptilian brain. This ancient part of the brain is like the brains of reptiles and birds; our basic drives, basic needs, and instincts reside in it. Wrapped around it is the **limbic system**, or the mammalian brain. In mammals, the limbic system is the part of the brain that affects calls (see [Chapter 1](#)). In humans, it is the source of screaming and crying. The **neocortex**, by far the largest part of the human brain, is where the language skills reside. This area of the brain contains **Broca's area** and **Wernicke's area**, discussed in [Chapter 1](#). It also contains: the **corpus callosum**, which facilitates communication between the hemispheres of the brain; the arcuate fasciculus that connects Broca's and Wernicke's areas; the angular gyrus that is associated with complex linguistics functions such as reading and writing; and Geschwind's territory that is associated with tool use.

Much of the recent research regarding first-language acquisition has been focused on brain development. Indeed, many websites now offer virtual tours of the brain.¹

Ideas about language acquisition

The **innateness hypothesis** proposes that children have an inborn (genetically hardwired) capacity to differentiate phonemes, extract words from the stream of language, and process grammar.

Linguists, such as Noam Chomsky (see [Chapter 5](#)) and Eric Lenneberg (1921–1975), believe that the potential for language is inborn in humans, that children are born with their brains hardwired for ability to learn language. This is known as the **innateness hypothesis**. Lenneberg compares language acquisition with other innate biologically based behaviors in nature. These behaviors have certain common characteristics:

- The behavior appears before it is necessary for survival.
- It does not appear in response to the environment.
- It is not the result of a conscious decision.
- It is not the result of formal education or training. In fact, formal instruction has very little effect.
- The behavior appears in a predictable sequence, at a certain stage of development.
- The behavior appears at a critical period; after that period it will be difficult or impossible to learn the behavior.²

Sucking, eating, grasping objects, walking, talking—all of these human behaviors exhibit the characteristics of biologically based behaviors. They don't need to be taught to human children. But cooking, sewing, carpentry, bike riding, reading, and writing require training and instruction; they are not biologically based. See [Figure 10-1](#).



FIGURE 10-1 Reading and writing require formal instruction.

To put human language learning in perspective, recall that in [Chapter 1](#) we mentioned Viki, a home-raised chimpanzee that was taught to say, with extreme difficulty, four hard to understand words. The researchers, a married couple with a baby the same age as the chimpanzee, spent many hours teaching Viki these four words. However, they noted that by six years of age, their child had learned thousands of words with no formal training at all.³

Universal grammar (UG) is the system involving phonemic differences, word order, and phrase recognition that is the basis for the theory of the innateness of language acquisition.

Language acquisition device (LAD) is the theoretical area of hardwiring in the brains of children that propels them to acquire language.

The **critical period hypothesis** proposes that the language acquisition device ceases to function, and the ability to acquire language with native fluency declines as childhood progresses, disappearing after the age of puberty.

The innateness hypothesis proposes that children have the innate capacity to process grammar; they are predisposed to a certain **universal grammar (UG)** involving

phonemic differences, word order, and phrase recognition. The hardwiring in the brains of children that allows, indeed propels, them to learn language has been called a **language acquisition device (LAD)**. Recent criticism of this term is based on the physiology of the brain, which has no single center for language acquisition. As you saw in the virtual tour of the brain, there are many parts of the brain involved in language processing. Lenneberg also proposed the **critical period hypothesis**, noting that after the age of puberty (twelve to fifteen years), the language acquisition device ceases to function and the ability to learn language with native fluency essentially disappears.

More recent evidence for the critical period in language acquisition is found in immigrant families. The children who immigrated before the age of seven speak the language of their new country with native fluency. Their performance on grammar and semantics tests was equivalent to that of native-born children of the same age. Those who immigrated between the ages of eight and fifteen performed more poorly than their native-speaking counterparts on the test of grammar, but performed equally well as their counterparts on semantic tests. Those children who immigrated after the age of sixteen did no better than adults on tests of English grammar and semantics.⁴ The older children and adults may, with

study and hard work, learn the language, but they will rarely achieve native fluency and will generally speak with an accent.

The **imitation hypothesis** of language acquisition proposes that children acquire language by imitating the people around them.

So how do children use their innate predisposition to acquire language? Intuitively, we sense that children acquire language by imitating the people around them. Of course, we know that children learn the language (or languages) that they hear spoken or signed around them. This is called the **imitation hypothesis** of language acquisition. In [Chapter 1](#), we discussed the arbitrary relationship between the meaning of a word and its sound. Learning that the sound /dog/ refers to a canine, and not a feline or a bovine, happens as children listen to the adults around them. Children in other parts of the world, listening to adults speaking other languages, learn to refer to the same animal with sounds such as /ʃiɛn/, /рѣяо/,⁵ /hʊnt/, or /kane/.⁶

However, imitation cannot account for other aspects of children's language. Children say **goed* instead of *went* or **mouses* instead of *mice*. They say sentences such as:

**Mama ball* instead of *Mama, throw the ball to me.*

**I have a sud on my hand* instead of *I have some suds on my hand.*

These are utterances that they have certainly never heard from an adult and cannot be imitating.

Poverty of the stimulus theory, proposed by Chomsky, accounts for the ability of children to acquire patterns of language for which they have not heard examples. It supports the innateness hypothesis, the theory that children are born with universal grammar and certain abilities to acquire language hard-wired into the brain.

Imitation also does not account for children's ability to learn all of the structures of the language when there is **poverty of the stimulus**.

For example, the child hears

He is going

He's going

and concludes that "he is" can be pronounced "he's." However, the child also hears

Is he going? Yes, he is.

But, in examining many transcripts of developing children's speech, there is no instance in which the child generalizes the contraction rule, making the mistake of saying

**Yes, he's.*

In another example, the child learns to form questions by moving the auxiliary verb to the beginning of the sentence:

John is going.

Is John going?

But in a sentence like

The man who is here is tall

which “is” should be moved to the beginning of the sentence? Children seem to understand that “the man who is here” functions as a single structure and they only move the second “is”:

Is the man who is here tall?

Since there is no stimulus in the environment to give children a clue to these structures (there are no examples of what not to do), Chomsky concludes that this is evidence of innate knowledge of the grammar, or “a priori structure dependent constraints” on grammar.⁷

Furthermore, imitation cannot fully account for the productivity of language generated by children in the five years after birth. Just like all human beings, they produce and comprehend utterances that they have never heard before.

The **reinforcement hypothesis** postulates that children acquire language by positive reinforcement when they produce a grammatical utterance and by being corrected when they don’t.

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dren learn language by positive reinforcement when they produce a grammatical utterance and by being corrected when they don’t. However, language studies in children as well as anecdotal evidence show that parents and caretakers usually respond to the facts of the child’s statement. So, when a three-year-old child asks

Doggie go outside?

the parents’ response will be either *yes* or *no*, depending on whether or not the dog is outside. They will not correct the grammar of the statement.

When parents do try to correct the child’s grammar, they often meet with frustration, as in this humorous exchange between a parent and a five-year-old:

CHILD: Nobody won’t play with me!

PARENT: No, “Nobody will play with me.”

CHILD: Nobody won’t play with you, too?

The **interactionist hypothesis** postulates that children acquire language by their innate language abilities to extract the rules of the language from their environment and construct the phonology, se-

mantics, and syntax of their native language. **Constructivism** is another name for the interactionist hypothesis.

The **interactionist hypothesis** (also known as **constructivism**) proposes that children use their innate language abilities to extract the rules of the language from their environment and construct the phonology, semantics, and syntax of their native language. In fact, it seems that the innate language ability is the ability to identify patterns in language, formulate rules about those patterns, and then apply them to new utterances. In all of the examples given in this chapter so far, the children who generated them have demonstrated that they know the English word order for a sentence, S-V or S-V-O. They have demonstrated that they know that the suffixes /d, /t/, or /əd/ make a verb past tense and the suffixes /s/, /z/, or /əz/ make a noun plural. They have demonstrated that they know that using the negative *not* with the auxiliary *do* negates the verb; they've also learned the use of the contraction *don't*. All of these rules are correct. However, the utterances are incorrect because the rules have been applied incorrectly or incompletely. Through interaction, observation, and trial and error, children spend their first five to ten years acquiring the language or languages that

surround them.

Cognitive-functional linguistics proposes that language acquisition is not a separate process of the child's development, with a distinct language acquisition device in the brain, but rather a result of the child's general cognitive and intellectual development.

In recent years, the proponents of **cognitive-functional linguistics** have taken issue with the concept of the language acquisition device, and indeed with the idea that language development and use are different from any other intellectual human activity. They argue that language is situated in a context and embedded in the human's environment and development. Rather than looking at language acquisition as a separate process of the child's development, they seek to blend all of the child's experience into a coherent whole. They consider language learning to be the result of general cognitive and intellectual development.

How do children acquire the components of language?

It now appears that babies begin language acquisition before birth by learning the “melody” of their native language. After birth they continue their language acquisition by cooing and babbling the sounds of human language. They go on to say one word, two words, and then longer sentences. They then spend many years learning the meaning of tens of thousands of words.

Phonology

There is evidence that a baby in the womb in the third trimester is already acquiring prosodic features of their native language, such as those based on pitch (see [Chapter 2](#)). For instance, at just three days old, the cries of a German baby can be distinguished from the cries of a French baby. French babies cry with a rather persistent rise in pitch, whereas the cries of German babies tend to have a slight rise in pitch and then a fall. These patterns

match the general prosodic features of the speech of the adult language of the baby’s caregivers. The researchers doing the study, Birgit Mampe and colleagues, cannot rule out the possibility that the babies learned this part of the melody of their language in the three days after birth. However, they believe that, based on other studies that show that prosodic features of speech pass through the wall of the abdominal area with little disruption, it is more likely that the learning begins in the womb.⁸

Cooing, the first verbal sounds that babies make, consists of sounds that are all vowels, such as *ahh*, *ooh*, *æhh*, *iiih*.

Babbling is the verbalization made by babies beginning at four to six months of age, which alternates consonants and vowels, such as *bababa*, *gagaga*, *mamama*.

Within a few months after birth, babies begin making verbal sounds. **Cooing**, which comes first, is all vowel

sounds, such as *ahh*, *ooh*, *æhh*, *iih*. By four to six months of age, babies are **babbling**, alternating consonants and vowels, such as *bababa*, *gagaga*, *mamama*. While cooing and babbling, they experiment with forming many sounds. They may respond to any sounds that are phonemic in any human language, whether or not those sounds are phonemic in the language they are hearing around them. For instance, experiments have shown that babies, including Japanese babies, respond to the sounds /l/ and /r/ as different phonemes. Later in life, Japanese speakers respond to them as allophones of the same phoneme and have trouble distinguishing between them. The babies of English-speaking families recognize the sounds of /t/ and /tj/ (the Russian phonemes mentioned in [Chapter 3](#)) as different, although they will have trouble doing so in later years. After six months of age, babies begin to learn the phonemic structure of their own language(s) and slowly stop responding to the phonemic distinctions of other languages. However, the fact that they can initially recognize the phonemic differences from all languages has been interpreted as evidence for the existence of the phonological component of a universal grammar (UG).

The ability to perceive distinctions among sounds precedes the ability to produce the sounds. Babies' typical mispronunciations include the following:

/nænæ/	for	<i>banana</i>
/fis/	for	<i>fish</i>
/dai/	for	<i>doggie</i>
/dus/	for	<i>juice</i>
/titu/	for	<i>thank you</i>



As babies begin to speak words with typical mispronunciations, they will resist attempts to correct them and become frustrated at adults who imitate them. They hear the word correctly; it is their production that isn't quite correct yet. But their production is more correct than you might think. When the child's speech is analyzed by a sound spectrometer, missing elements, such as the first syllable of *banana* and the middle consonant of *doggie*, are heard. They are being produced, but too softly to be heard by the human ear. The difficult (more marked) consonants /ʃ/, /θ/, and /j/ seem to be replaced by the easier (more unmarked) consonants /s/, /t/, and /d/. But here again the sound spectrometer detects that the sounds are slightly different from the /s/, /t/, and /d/ pronounced in the places where they are the correct consonant. So, although the adult hears the last consonant in /fis/ and /dus/ as being the same, the child (and the sound spectrometer) hears them as different.

Syntax

Holophrases are one-word utterances with which a toddler expresses an entire sentence.

The **holophrastic stage** in language acquisition is when a child uses holophrases.

Babies' first words are not words; they are sentences. When a twelve-month-old baby says *cat*, it is a sentence that might mean "There is the cat" or "I want to pet the cat" or "Keep that cat away from me!" These one-word utterances are referred to as **holophrases**, because they are complete or undivided phrases; this stage of language acquisition is the **holophrastic stage**. Typical holophrases and their possible meanings are:

ball

I want the ball.



Throw me the ball.

I see a ball.

mama

Come here, mama.

That purse belongs to mama.

There is mama.

bird

There's a bird outside.

I hear a bird.

Let's go look at the bird.

I see a picture of a bird.



Some holophrases are utterances that are more than one word, but are perceived by children as one word: *I love you, thank you, Jingle Bells, there it is.*

The **two-word stage**, which begins sometime after eighteen months of age, is when children begin combining words into two-word utterances.

The **two-word stage** begins sometime after eighteen months of age, when children begin combining words into two-word utterances. But these are not just any two

words spoken together. They are two words that have a grammatical relationship to each other and express a complete thought in the same way that an adult sentence does. Very often the grammatical relationship expressed is agent–action, action–object, possessor–possession, or action–location, as in the following examples:

agent-action	<i>Doggie run</i>
action-object	<i>Push ball</i>
possessor-possession	<i>Mommy car</i>
action-location	<i>Ride car</i>



The fact that there is underlying syntax generating these utterances becomes apparent when the child substitutes appropriate words to produce new sentences. For instance:

Kitty run
Doggie eat
Push block
Throw ball
Daddy car
Mommy house
Ride bus
Sit car

If you expand these utterances into full English sentences, you will find that the child is already using English word order. They conform to the S-V-O word order of English.

Telegraphic speech occurs as children begin adding more words to their two-word sentences.

As children begin adding more words to their two-word sentences, their utterances are described as **telegraphic speech**. (They resemble telegrams that were priced by the word; to save money, the writer deleted function words such as auxiliaries, articles, pronouns, and copulas— *is*, *am*, and *are*.) In many ways, telegraphic speech is simply an expansion of the two-word utterances. Modifiers might be added to generate *throw blue ball* or *sit car now*. Objects or locatives might be added, as in *doggie eat food* or *kitty run outside*. Of course, several typical modifiers take on special meaning for two-year-olds who are learning to deal with other children and trying to assert their independence: *my*, *mine*, *no*!

Exercise 1 Early language acquisition

5. What were some of the child's two-word utterances? What did they mean?

6. How do the parent's recollections of their child's development differ from the information in this chapter? What do you think is the reason for the differences? Analyze and discuss your conclusions.

Morphology

As children's language becomes more sophisticated, they begin to add bound morphemes to the basic words (see [Chapter 4](#)). One of the first bound morphemes they acquire is the plural marker. In fact, children may go through three steps in the acquisition of the plural marker. In the first step, they imitate what they hear around them:

Singular	Plural
<i>mouse</i>	<i>mice</i>
<i>child</i>	<i>children</i>
<i>suds</i>	<i>suds</i>
<i>sip</i>	<i>sips</i>
<i>dog</i>	<i>dogs</i>
<i>house</i>	<i>houses</i>



Overgeneralization occurs when children acquire a morphological rule and then apply it too broadly.

But with their innate drive to identify patterns and apply them as rules, in the second step they **overgeneralize** the rule (add /s/, /z/, or /əz/ to form a plural) and apply it to all of the words. [Box 10-1](#) is about a famous linguistic experiment, the Wug Test, in which children demonstrated that they had acquired the pluralization rule. They even perceive *suds* and *gauze*, which are mass non-count nouns that cannot have a plural form, as plurals just because they end in /z/. At this step children produce:

Singular	Plural
<i>mouse</i>	<i>mouses</i>
<i>child</i>	<i>childs</i>
<i>children</i>	<i>childrens</i>
<i>sud</i>	<i>suds</i>
<i>gau</i>	<i>gauze</i>
<i>sheep</i>	<i>sheeps</i>



This same sequence of steps applies to the acquisition of the past tense marker /t/, /d/, and /əd/. At the second step we hear **goed* instead of *went*, **breaeked* instead of *broke*, **runned* instead of *ran*.

It is not until the age of four or five that children arrive at the third step, in which they learn the exceptions to the rules. And as you will read in [Chapter 14](#), language change has come about gradually, when language communities have ignored the exceptions to the rules.

Exercise 2 Parents' perception of language development

1. Interview the parent of an older child to answer the following questions about what they remember of their child's language development.
 - a. How old is the child now? How do they recall their child's language development? Did they keep notes of the child's words and sayings in a "baby book"? Do they remember them as part of the family lore? Or do they have video of the child speaking?

- b. What “cute” mistakes do they remember their child making? Did they say words like *mouses* or *goed*?

Semantics

Productive vocabulary consists of the words that a person is able to use. **Receptive vocabulary** consists of the words that a person is able to understand.

As early as six months, babies indicate that they understand the meaning of words by looking at the object or person mentioned. Children say their first word around age one. From then on, they learn about ten words a day until around the age of six, when their **productive vocabulary** (the words they are able to use) will be about 14,000 words. Their **receptive vocabulary** (the words they are able to understand when they hear them) can be twice that size. How are they able to accomplish this huge task? How are they able to sort through the various sounds they hear coming from adults and assign the correct meaning to each sound?

Imagine a one-year-old child is in the backyard and sees a cat on the roof of a neighbor's house. The mother points to it and says, “Look at the cat.” By the age of one, the child has heard the introduction “Look at the _____” very often and knows that it is intended to focus attention on a par-

ticular item, which is named in the blank space. In this case, the blank space is filled in with *cat*. But how does the child know to what the word *cat* refers? Is it the house, the roof, the chimney, the sky, the clouds, the tree shading the roof, or the animal? All of these items are in the same general direction that the mother is pointing. Furthermore, how does the child know that the word *cat* refers to the entire animal and not just one of its parts, like the tail or the mouth? And how does the child learn that *cat* only refers to some small, furry animals and not to others that are called *dog*?

Just as in the acquisition of phonology and morphology, the acquisition of semantics follows universal principles that guide the child in sorting out the meanings of words. First of all, children assume that an identifying word applies to the whole object, not its parts or attributes. So with the word *cat* or *wug* (see [Box 10-1](#)), children assume that the word applies to the whole animal, not its body parts, color, or texture. Therefore, in the scene described previously, the child would be most likely to apply the word to the animal, because the child can see the entire animal, *but* only parts of the house, sky, and tree.

Overextension occurs when a child acquires the definition of a word and applies it too broadly.

Next, children begin the process of refining their understanding of words. First they extend the meaning of words they know to things that have similar properties. This **overextension** is similar to the overgeneralization in syntax mentioned earlier. For instance, the child who has learned that this small animal is called *cat* may over-extend and apply that word to all small animals or even all animals, large and small. In fact, you might find that the definition of *cat* is “four-legged animal with fur.” For this child, the category of *cat* includes dogs, cows, horses, rabbits, sheep, mice, rats, and hamsters. Another child, whose first words include *doggie*, uses that word for birds, cats, horses, pandas, monkeys, and apes. (This child uses the word *fish* for any animal found in the water, including turtles, seals, sea lions, frogs, and otters.)

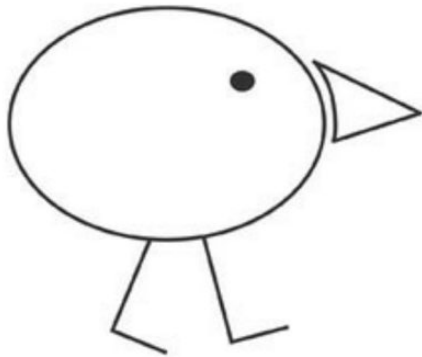
Children categorize the objects around them systematically. Experiments with babies have shown that they first pay attention to size, shape, and texture. The overextensions of *cat* and *doggie* described earlier are based on

shape and texture (four-leggedness versus two-leggedness and fur/feathers versus bare skin).

English-speaking children often learn the word *ball* and apply it to all round things (shape). Some may use the same word to refer to bugs, crumbs, and pebbles (size). They may refer to all men as *Daddy* (size and shape). But they will not group and name things according to color. In

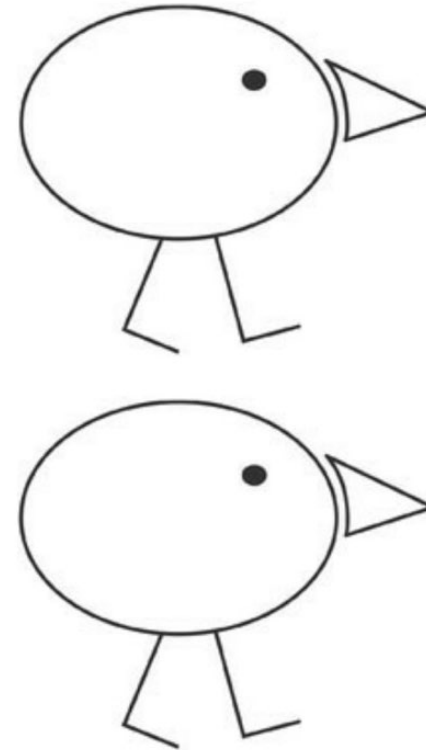
Box 10-1 The Wug Test

In a famous linguistic experiment of the 1950s, Jean Berko Gleason (b. 1931) showed children a line drawing of a nondescript animal and said, "This is a wug."



Next, she showed them a page with two of the same animals on it and said, "Now here is an-

other one. There are two of them. There are two _____." Children as young as three years old were able to supply the correct plural, *wugs*, for a word they had never heard before.



Not only was the plural morphologically correct, but it was also phonologically correct. The -s morpheme was pronounced /z/ because it followed /g/, a voiced sound. When another critter called a *bik* was introduced, the plural morpheme was pronounced /

s/ because it followed /k/, a voiceless sound. An object called a *tass* was pluralized by adding /əz/.

The full experiment included morphemes that form possessives, tenses, and agentives (adding *-er* to a verb to name the person who does the action).

The experiment showed that very young children extract morphological and phonological rules of their language and apply them in new circumstances. In other words, the language of children is productive.

Something you can try is to interview a preschool-age child (with the permission of a parent) and ask questions similar to the Wug Test. Make up nonsense words illustrated with simple pictures. See how the child applies the rules of pluralization and tense formation.

For more information, go to www.wikipedia.org/wiki/Wug_Test.

fact, color names and association of items by their color is something that is taught formally in preschool books, early childhood education curricula, and television programs such as *Sesame Street*; it is an outcome of the influence of the English language that causes its speakers to categorize things by their color. As we mentioned in [Chapter 9](#) in the section “Language influences culture,”

children who speak Navajo learn to organize things by the lexical categories (related to number, length, rigidity, portability) in their language, not by color.

All adult words encompass a range of meanings. The child’s task in learning semantics is to learn the range of meanings that adults assign to each word. Children’s “errors” in this regard are the result of having a different range of meaning for the word than adults do. Don’t forget that the adult definition of *dog* includes such different-looking animals as a Chihuahua and a Saint Bernard. Compared to these two, the cat and the small terrier look very much alike! In English, adults distinguish between their father, grandfathers, and uncles, but there are many African and Native American languages in which all of these men would be referred to by the same kinship term. So children who call all men they know *Daddy* are “wrong” in English, but might be “right” if they are learning a different language.

One reason that children may overextend is that they don’t have the vocabulary to identify every object, so they use the vocabulary that they have (see [Box 10-2](#)). (This is the same circumstance—small vocabulary—that produces colorful phrases in pidgin languages. See the “Contact languages: pidgin and creole” section in [Chapter 8](#).)

Underextension occurs when a child acquires the definition of a word and applies it too narrowly.

As children learn that their broad categories have to be narrowed down and they acquire a larger vocabulary, they may go through a phase of **underextension**. In this phase, a word like *chair* may only be used for the child's special chair but no others, or the word *dog* may refer only to the child's own pet.

The processes of overextending and underextending go on throughout the preschool years as the child's lexicon and its entries are revised and refined. During the school years, and even in adulthood, they continue this process through formal education. Schoolchildren learn that they underextend the word *mammal* by failing to include the marine mammals, such as dolphins and whales. In fact, they may underextend the word *animal* by not including fish, insects, or protozoans. In anthropology classes, college students learn that they cannot overextend the word *monkey* to refer to all nonhuman primates, including apes and prosimians.

Pronouns pose another problem for children because their meaning shifts, depending on who speaks to them

and who is spoken to. Before the age of three years, children generally use names, not pronouns. So they produce utterances such as

Daddy throw Kevin ball

Theo see Mama

Box 10-2 A six-year-old's lexicon

Six-year-old Samantha, whose parents rent their house, asked her grandparents who the *owner* of their house was. Puzzled, her grandparents, who own their own house, asked what she meant by *owner*. Samantha replied with her definition of *owner*: "You know, when something breaks you call him to come fix it."

When telling what happened when her father's car broke down and had to be towed to a mechanic, Emma, not having the term *tow truck* in her vocabulary, said they had to wait for a "pick-up truck that drags cars behind it."

Daniel, six years old, called an LP record album a *CD*. Another child combined the words *earbud* and *headphone* to name the *hearphone*. Still another called a match a *firestick*. And what comes at the end of a sentence? A *pyramid*, of course!

Children use these to mean

(You) throw the ball to me.

I see you.

Before they have accurately begun to use pronouns, such as *you* and *me*, they may confuse them, using them interchangeably. Or they may treat them as an extension of the preceding word and not a separate word. A two-year-old child who has heard her mother say “Do you want me to carry you?” will hold her arms up and say “Carry you!”

The pragmatics (rules) of conversation require that a speaker use a proper noun or noun before using a pronoun to establish the referent (see the section on discourse analysis in [Chapter 7](#)). Three- and four-year-olds don’t always do this, making their conversations difficult to follow. Statements such as

He took my ball!

She wants to go, too.

He came to my house.

are offered with no explanation of the pronoun referents, much to the confusion of the adult listener.

Exercise 3 Semantics and young children

1. Interview a parent of a child between the ages of three and five years to determine the definitions of the child’s words.

a. How old is the child? Or how old was the child when each of the definitions was valid?

b. What words did the child say, and what were their definitions?

During preschool and beyond

As children grow older and more fluent in their language, they acquire the elements of fluency in a predictable order and within a predictable time range. The inflectional bound morpheme *-ing* (present progressive) will usually have been the first grammatical morpheme to be acquired during the toddler years. In the preschool years, it will be followed by such morphemes as *in*, *on* (prepositions), *-s* (possessive), and *the*, *a/an* (articles), among others. [Table 10-1](#) summarizes fourteen of these important morphemes and the age range at which they are found to be used correctly 90 percent of the time.

TABLE 10-1 The sequence of grammatical morpheme mastery

Grammatical morpheme	Example	Age range of mastery (in months)

Present progressive	Mama eating	19-28
<i>In</i> (preposition)	Doggie <i>in</i> car	27-30
<i>On</i> (preposition)	Kitty <i>on</i> chair	27-30
Regular plural	Ladies going	27-33
Irregular past tense	Mama <i>went</i> to Ralph's	25-46
Possessive	Kevin's car	26-40
Uncontractible copula	Lucy <i>was</i> crying	27-39
Articles (<i>the</i> , <i>a/an</i>)	Daddy fixing <i>the</i> bike	28-46
Regular past tense	Mama washed	26-48
Regular third-person singular	Sami <i>eats</i>	26-46
Irregular third-person singular	Theo <i>has</i> pancake	28-50
Uncontractible auxiliary	I <i>was</i> looking	29-48
Contractible copula	Dale's busy	29-49
Contractible auxiliary	John's cooking	30-50

Source: L. Hulit and M. Howard, *Born to Talk: An Introduction to Speech and Language Development*, Boston, MA:

Allyn & Bacon, 2006. Adapted from R. Brown, *A First Language: The Early Years*, Cambridge, MA: Harvard University Press, 1973; and J. Miller, *Assessing Language Production in Children: Experimental Procedures*, Baltimore, MD: University Park Press, 1981.

Negation and question formation are two important developments in the syntax of preschool children. The two-year-old simply places a negative word—*no*, *don't*, or *not* (used interchangeably)—at the beginning of the utterance to negate it.

Don't that one. (Not that one.)

No vacuum. (Don't use the vacuum cleaner.)

Not buckled. (My car seat's not buckled.)

By about three and a half years, the child, whose utterances are becoming longer and more complex, has learned to put the negative word between the subject and predicate, but still doesn't distinguish between them.

That *don't* Scooter. (That's not Scooter; it's another cat.)

I *not* close it. (I didn't close it.)

I *no* want it. (I don't want it.)

Note that at this age the child considers words such as *don't*, *won't*, or *can't* to be single units, not contractions. The child doesn't use them in the uncontracted form and

doesn't use the positive form (*do*, *will*, or *can*), either. By about four years old, however, the correct forms are beginning to appear in the correct settings, along with additional modals (*couldn't*, *wouldn't*, *shouldn't*) and past tense contractions (*wasn't*).

The two-year-old forms questions by using a rising intonation and perhaps a questioning gesture along with a declarative sentence. At this age, *yes/no* questions and *wh*- questions have the same form.

Mama home? (Is Mama home?)

Daddy go? (Where did Daddy go?)

Between about two and a half and three, the child begins to use *what*, *where*, and *who* for *wh*- questions.

What old are you?

Where Daddy go?

Who that?

Around three years old, *why*, *how*, and *when* are used to form questions. The order of appearance of the *wh*- question words makes sense when you realize that *what*, *who*, and *where* refer to concrete referents. But *when* refers to time concepts that the small child has trouble grasping; *why* and *how* introduce complex questions that are difficult to answer even for adults. Also around three years

old, the form of *yes/no* questions begins to take on the correct inverted word order with auxiliary verbs.

Can Grannie go with me?
Do you have a cookie?

However, the child will be school age before producing complex questions with modals and negative elements such as

Don't you want to go with me?

In [Chapter 5](#), we talked about how we recognize the grammaticality of an utterance. But, as part of their socialization, children also learn the acceptability of an utterance. Children of all languages learn how to form grammatical questions. But when are they acceptable? English-speaking American children will recognize the question "How old are you?" as a grammatical question that is acceptable for adults to ask them. However, at some point they will learn that it is not acceptable for them to ask the same question to an adult. Araucanians (indigenous people of Chile) learn that repeating a question is an insult and is not acceptable. Cahinhua (indigenous people of Brazil) learn that a direct answer to a question means that the speaker has no time to talk further; a vague answer means the speaker is willing to talk.⁹ The

Western Apache observe times at which it is acceptable not to speak at all and to observe silence. For instance, when their children return home from boarding school, they may not speak normally for a day or so; when they are with people who are sad or who have been angry, they will observe an extended period of silence.¹⁰

Preschool children are also learning pragmatics, the rules of conversation and the use of language. Sometime after age three they learn that when a person who is speaking to them pauses, it means that it is their turn to speak. They also become aware that a pause longer than about one second means that the conversation partner is not going to respond. At around three and a half, they may also become aware of the conversational requirement that each subsequent turn contain information on a similar topic. They may also then become aware of strategies for changing a topic to one of more interest than the current one. It is at this point that a child who is interested in trains will start a turn with

Speaking of choo choos . . .

even though the topic of the previous turn was not about trains.

One element of conversation that 64 percent of preschoolers have not mastered is the appropriate loudness for the personal or social distance; they speak too loudly

(see the section on proxemics in [Chapter 13](#)). It's no wonder that preschool teachers are always reminding their students to use their indoor voices.

Conversation repair is the attempt to revise or expand an utterance when the speaker senses that the listener has not understood.

Another feature of pragmatics, **conversation repair**, occurs when the speaker senses that the listener has not understood the message. The speaker makes corrections or restatements to clarify the message. Teachers and parents often expand a message, giving examples or more information. They might also paraphrase the information using synonyms for the original wording. When an adult says "What?" toddlers between one and two years old try pronouncing the original word differently. Between two and a half and three, children try rewording, perhaps using a noun instead of pronoun or in some way simplifying the utterance. As children get older, their techniques for conversation repair do not change, but their ability to analyze the problem and focus on the specific point of misunderstanding increases. Also, their patience in making a number of attempts increases. A five-year-old will

typically give up after two tries; a nine-year-old, on the other hand, will persist for five or six tries, each time trying to pinpoint the basis for the miscommunication.

Indirect language (see [Chapter 8](#)) is easily misunderstood by preschool children. The three-year-old who answers the phone treats "Is your mother home?" as a *yes/no* question, not as an indirect request. But the five-year-old understands the indirect request. Preschool children take language literally; therefore, they will often misunderstand polite questions or indirect hints such as the following:

Would you like to clean your room?
Can you pick up your toys?
Your toys are all over the floor.

Because they take language literally, they also do not understand the humor of jokes that are based on the multiple meanings of words. However, six- to nine-year-olds enjoy jokes based on phonological similarity, such as

What's black and white and /rɛd/ all over?
(If *read*, then a newspaper; if *red*, an embarrassed zebra or various other answers.)

Nine- to twelve-year-olds love jokes based on words with more than one meaning, such as

What has four wheels and flies? (A garbage truck or an airplane.)

As children learn to love these jokes (and tell them incessantly), they also enjoy books of riddles, a popular genre for school-age children. These children are also perfecting their comprehension of syntax in sentences that are linguistically complex (see [Box 10-3](#)).

Box 10-3 The acquisition of syntax in children from five to ten

Carol Chomsky, wife of Noam Chomsky, did research in language acquisition in school-age children, investigating four syntactic constructions that she assumed to be only slowly acquired after the age of five because of their linguistic complexity. She designed sentences with no semantic clues that the children had to interpret according to their understanding of syntax. She chose constructions that had at least one condition making them difficult to understand. That condition might be an exception to the general pattern of the language, or it might be a restriction that operates in some circumstances but not others.

One example of her research structures is the following: in a sentence with two noun phrases (NP),

the subject of the verb will be the NP closest to the verb. So in the sentence

Kevin *tells* (*asks, orders, begs, requests*) Theo to pick up the toys

Theo is going to do the work. But if the sentence is

Kevin *promises* Theo to pick up the toys

then Kevin is going to do it. Sentences with the word *promise* in this position represent an exception to a general pattern of the language; that exception is acquired by children between the ages of five and a half and nine. In other words, many children before the age of nine will hear both of these sentences and think that Theo will be picking up the toys.

Chomsky's research design verified that the children understood the meaning of the verbs involved. They know what it means to make a promise and they know what it means to tell someone to do something. But, as she points out, there are two components to a complete understanding of an utterance. The child must understand the lexicon, the words, and must understand how they are used in the sentence, the syntax.

For practical purposes, this example means that if a teacher in the primary grades tells the class

I promise you to bring cookies to school tomorrow

some of the children are going to go home and tell their parents that they need to bring cookies to school tomorrow!

Source: Carol Chomsky, *The Acquisition of Syntax in Children from 5 to 10* (Cambridge, MA: MIT Press, 1969).

Nonverbal communication

Deaf children and hearing children in Deaf families acquire sign language in a way that is similar to the acquisition of spoken language (see [Chapter 11](#)). All children, both hearing and deaf, make meaningful gestures, called emblems, long before they can speak or sign (see [Chapter 13](#)).



FIGURE 10-2 A nine-month-old preverbal child is asked the question “How big is the baby?” and gestures the answer “So big!”

Box 10-4 Baby signs

Linda Acredolo, Ph.D., psychology professor at the University of California at Davis, and Susan Goodwyn, Ph.D., psychology professor at California State University, Stanislaus, have developed a program to encourage babies to learn a whole vocabulary of ges-

tural signs so that they can make their needs known to their parents before being able to verbalize them. The “baby signs” or symbolic gestures, as they are more correctly called, are based on ASL and give the child a basis for learning ASL in the future. Acredolo and Goodwyn also said, “In a nutshell, the signing babies outperformed the other babies in comparison after comparison. They scored higher in intelligence tests, understood more words, had larger vocabularies, and engaged in more sophisticated play.”

Some of the research that they cite in their books on infant-learning includes the findings that:

- Newborns can recognize a Dr. Seuss story their mothers had read to them while they were still in the womb.
- Encouraging nine- to twelve-month-old babies to use simple, homegrown sign language not only lowers frustration levels, but also makes learning to talk easier and raises IQ scores.
- The more nursery rhymes a three-year-old knows, the better prepared the child is to learn to read.

You can learn more about the Baby Signs program at www.babysignlanguage.com.

*Source: Linda Acredolo and Susan Goodwyn, *Baby Signs: How to Talk with Your Baby Before Your Baby Can Talk*, 3rd ed. (New York: McGraw-Hill, 2009), quotation p. 4.*

Parents have long known that babies are capable of communicating with gestures many months before they can say their first words (see [Figure 10-2](#)). It is not uncommon for a nine-month-old to wave “bye-bye,” to hold out his or her arms “asking” to be picked up, or to make an exaggerated chewing movement with the mouth to indicate hunger. A program to systematically teach hearing babies a system of signs has been developed to facilitate early communication between parents and infants (see [Box 10-4](#)).

Bilingualism

Simultaneous bilingualism occurs when a child acquires two (or more) languages from birth.

Most of the people in the world acquire more than one language. **Simultaneous bilingualism** occurs when a child acquires two (or more) languages from birth. This occurs when more than one language is spoken in the household. In Quebec, Canada, it is not uncommon for children to be raised in a home where one parent is Francophone (French-speaking) and the other Anglophone (English-speaking). In sub-Saharan Africa, children are raised in households speaking two or three indigenous languages. In the United States, a child may be raised by a foreign-speaking nanny who has joined an otherwise English-speaking household. Or in an immigrant family, the grandparents might speak the ancestral language to the child, while the parents and older siblings speak English.

Sequential bilingualism occurs when a child acquires a second language after having begun to acquire a first language.

Sequential bilingualism occurs when the child acquires a second language after having begun to acquire a first language. In the United States, the older children in immigrant families may speak only the ancestral lan-

guage until they begin school, where they acquire English. In India, where English is a lingua franca uniting a diverse country, children may only acquire it as part of their formal education. In parts of southern China, Cantonese is acquired in the home, but Mandarin, the official language, is acquired in school. Whether children acquire multiple languages simultaneously or sequentially, they will achieve native fluency only if they do it during the critical period before puberty.

Attitudes toward bilingualism reflect attitudes of the larger cultural community. Armenians believe that the more languages a person speaks, the better educated and well rounded that person is. They pride themselves on speaking four, five, or six languages. They raise their children to speak Armenian, Russian, Syrian, Greek, and Arabic, among other languages. Switzerland is a small country surrounded by larger, more powerful European neighbors. Many Swiss are proudly trilingual, speaking German, French, and Italian. In the small European country of Luxembourg, it is common to hear people code switching among English, French, German, Dutch, and Flemish.

The United States has a history of isolationism; the emphasis on monolingualism is a reflection of this attitude. In the early twentieth century, there was a large wave of immigration to the United States from non-Eng-

lish-speaking countries, especially those in Eastern and Southern Europe. Assimilation of the new immigrants was the goal of the school systems. As part of this goal, parents were advised to speak only English to their children, on the grounds that hearing two languages would confuse children.

In 1929, studies comparing the IQ test performance of bilingual immigrant children and monolingual native-born children showed that the monolingual native-born children consistently scored higher. Rather than conclude that the immigrant children were genetically inferior, the progressive thinkers of the day concluded that bilingualism was the cause of the poor performance. The native-born children were middle class, while the immigrant children were of the poorer, lower class; but this difference in their socioeconomic backgrounds was not considered. Later studies from Canada and Israel compared bilingual and monolingual children of similar socioeconomic backgrounds; they concluded that bilingual children actually have several advantages over monolingual children. They found that bilingual children are better at solving certain problems; they have more mental flexibility and a greater awareness of how language works.¹¹

Theories concerning bilingual language acquisition

The **unitary system hypothesis** proposes that infants exposed to two or more languages begin by constructing one lexicon and one set of semantic rules to encompass both languages.

The **separate systems hypothesis** proposes that infants exposed to two or more languages differentiate the languages from the very beginning, constructing different phonological systems, lexicons, and semantic systems.

There are two main hypotheses that propose how children acquire and process two or more languages. Each has its proponents and detractors. The first is called the **unitary system hypothesis** and the second is the **separate systems hypothesis**.

Proponents of the unitary system hypothesis believe that infants who are exposed to two or more languages begin by constructing one lexicon and one set of semantic rules to encompass both languages. Later, they divide the words into separate lexicons for each language, but continue using one set of rules. Around three years of age, they develop separate sets of semantic rules. An example of language mixing used to support the unitary system is the two-year-old French/English child who asks an English-speaking babysitter for *beurre* (butter) *on bread*.

Researchers who support the separate systems hypothesis believe that infants differentiate the languages from the very beginning, constructing different phonological systems, lexicons, and semantic systems. These researchers would interpret the preceding example of language mixing by the child as a form of code switching, similar to Spanish speakers who use English words like *OK* and *bye* in their conversations. Or they interpret these examples as the child's attempt to use the best word possible with a limited lexicon; when there is no English word available, use the French word (see [Box 10-2](#)).

Several studies of bilingual children have shown that their vocabulary in each language is somewhat smaller than the vocabulary of monolingual children of the same age. However, when their vocabulary in both languages is considered, it is larger than the vocabulary of

monolingual children. One study of Spanish/English preschool children in south Florida showed that there was as little as a 30 percent overlap in the vocabularies. In other words, only 30 percent of the children's words were translation equivalents, such as *dog/perro*, *sister/hermana*, *milk/leche*.¹² Fully 70 percent of the words in these children's vocabularies had no equivalent words in their other language.

This study has been cited as evidence for the unitary system hypothesis because most of the words have no duplicate in the other language. However, proponents of the separate systems hypothesis maintain that this is only evidence that the child is learning the different languages in different settings. The parents speak Spanish at mealtimes; therefore, the child has no English words for rice, beans, bread, and butter. English is spoken at the preschool; therefore, the child has no Spanish words for puzzle, finger paints, and animals such as octopus, antelope, and kangaroo. The vocabularies overlap where the child's experience overlaps; in these places, the child has a word in each language.

Bilingual children go through the same stages of syntactic development that monolingual children do: holophrastic, two-word, and telegraphic. Interestingly, their mistakes correspond to the mistakes of monolingual

children in each language. For instance, young English speakers delete verb endings in their telegraphic speech:

Doggie eat food.
Kitty run outside.

instead of saying

Doggie eats food.
Kitty runs outside.

Young Spanish speakers do not delete verb endings. Bilingual Spanish/English children delete verb endings in English, but not in Spanish. This has been cited as further evidence for the separate systems hypothesis, and has sometimes been referred to as “two monolinguals in one head.”¹³

Second-language learning after puberty

Learning a language after the age of puberty—as a result of immigration to a new country, as an academic requirement for a diploma, or as an educational goal for

self-improvement—is a somewhat different process than first-language acquisition. Whether it takes place in a classroom or in contact with speakers of the second language, it is more of an intellectual process than first-language acquisition. It may involve pronunciation practice, grammar exercises, and vocabulary memorization. Or it may be less formal and simply involve listening carefully to native speakers, asking about the meaning of words, or analyzing and imitating utterances. In any case, lexical and grammatical knowledge of the new language is stored in a different part of the brain than the first language (see [Box 10-5](#)). Much of the difficulty encountered in learning the second language is due to interference from the first language.

Box 10-5 The secondary cognitive plane

Second (and subsequent) languages seem to exist on a different plane than the primary language; they are stored in a separate part of the brain than the first language. In a foreign environment, a person trying to make himself or herself understood may reach into his second-language plane and come up with the wrong language. This is especially common when the

person is under stress, is not thinking clearly, or is more fluent in one foreign language than another.

An American hospitalized and under strong medication in Eastern Europe, trying to make herself understood to the Bulgarian-speaking nurses, searched her meager Bulgarian vocabulary. Not finding the needed words in Bulgarian, instead she asked in Spanish for *Agua con hielo, por favor* ("Water with ice, please"). (Luckily, a doctor on duty had trained in Panama and understood her.)

A Chinese anthropologist was visiting an American colleague when they met with an Austrian visitor. At dinner, the American, carrying on the conversation in English with his international guests, casually commented to the Austrian, *Ch'ing-lai, puke-ch'I*. He had accidentally encouraged his European guest to "eat up!" in Chinese.

The Chinese anthropologist who witnessed this exchange hypothesized that it would not be unusual to see an American student of Spanish use that language to communicate with a Japanese tourist.

Source: Huang Shu-min, "A Cross-Cultural Experience: A Chinese Anthropologist in the United States," in Philip R. DeVita and James D. Armstrong, eds., *Dis-*

tant Mirrors: America as a Foreign Culture (Belmont, CA: Wadsworth, 1993), 39–45.

Phonology

During the early stages of first-language acquisition, babies learn the sounds that are phonemic in their language. After puberty, the first-language phonological system often interferes with learning the second language. Think of the difficulties that foreign speakers have in pronouncing English (see [Box 3-3](#)) or the difficulty English speakers have in pronouncing the African click or the Germanic velar fricative. Sounds that do not occur in the sound system of the first language have to be learned in the second-language classroom by demonstration and pronunciation drill.

Second-language learners also have to be taught which sounds are phonemic and which sounds are not. By classroom drill, English-speaking students of Russian learn the difference between the /t/ and /tʲ/ (see [Figure 3-2](#)). Students of Spanish have to learn the difference between the single *r* alveolar flap and the double *r* trill. Japanese students of English have to learn to recognize the difference between /l/ and /r/.

Morphology and syntax

The rules for forming verbs and plurals in a first language other than English may cause errors in learning English as a foreign language. For instance, in Spanish, the subject may be deleted in many sentences because the conjugation of the verb implies the subject. In similar sentences, Spanish-speaking learners of English will produce such sentences as

- *Is not here.
- *Are in school.
- *Use the car.

instead of the English sentences

He is not here.
They are in school.
I use the car.

On the other hand, English speakers learning Spanish will always use the pronoun (which is obligatory in English), producing sentences such as

Él tiene un lápiz. (He has a pencil.)
Yo hablo el español. (I speak Spanish.)

Ellos estudian en la escuela. (They study at school.)

Although these sentences are essentially correct, the inclusion of the subjects (*él, yo, ellos*) sounds stilted and is not idiomatic Spanish.

Asian-language speakers will have difficulty with English articles because their languages do not have articles. They will omit them completely or use them incorrectly. For example, a Japanese student, who was married to an American, introduced himself in an ESL class by saying

I am the musician; my wife is the teacher.

Although these clauses are not ungrammatical in English, they were used incorrectly in his statement (see the section on discourse analysis in [Chapter 7](#)). To make them correct, they would have had to be preceded by an introductory statement such as

In my family there is a musician and a teacher.

Without this introductory statement, he should have said

I am a musician; my wife is a teacher.

Speakers of languages in which the adjective follows the noun will tend to do the same in English, producing phrases such as

*house red
 *class small
 *chair rocking

instead of

red house
 small class
 rocking chair.

Second-language learners will transfer the linear word order of their first language (S-V-O, S-O-V, V-S-O; see [Chapter 5](#)) to the second language. This makes it easier for students to learn languages with similar word order. The Romance languages—Italian, Spanish, and Portuguese—all have the same word order as English. In German, however, some sentences are S-V-O and some are S-O-V, making it more difficult for English speakers learning German.

Second-language learners whose first languages are analytical or isolating languages, with no inflections, often ignore inflectional affixes (see [Chapter 4](#)). Vietnamese or Cambodian speakers seem to “swallow” or drop the English plural marker and past tense marker.

Fossilization of the first-language characteristics results in the “foreign accent” of second-language learners after the age of puberty.

The foreign accent of second-language speakers is the result of the **fossilization** of the first-language characteristics (phonological system, morphology, and syntax) in the second language to produce the pronunciation and grammatical “errors.” Because these errors are the product of the rules of the first language, second-language learners with the same first-language background have similar accents and similar difficulties with the new language.

Summary

Much of the recent research regarding first-language acquisition has focused on brain development. Many linguists believe that the potential for language is innate to humans, that children are born with their brains

hardwired for ability to learn language. This innateness hypothesis states that they are predisposed to a certain universal grammar (UG) involving phonemic differences, word order, and phrase recognition. This hardwiring in the brain has been called a language acquisition device, and it seems to work only during childhood, according to the critical period hypothesis. It works despite poverty of the stimulus. Other proposals concerning language acquisition include the imitation hypothesis, the reinforcement hypothesis, the inter-actionist hypothesis (constructivism), and cognitive functionalism.

Children seem to use their innate language abilities to extract the rules of the language. Within a few months of birth, babies begin cooing and then babbling. Around one year of age, children begin saying one-word utterances, which are referred to as holophrases; this stage of language acquisition is the holophrastic stage. Sometime after eighteen months of age, children enter the two-word stage, in which they combine such words as agent–action, action–object, possessor–possession, and action–location. As children begin adding more words, their utterances are described as telegraphic speech. As they begin to learn the rules of morphology, they acquire the plural marker, which they overgeneralize.

As early as six months of age, babies indicate that they understand the meaning of words by looking at the object

or person mentioned. By the age of six, their productive vocabulary will be about 14,000 words. Their receptive vocabulary is considerably larger. Children overextend the meanings of words; they may also underextend them. All adult words encompass a range of meanings; the child's task in learning semantics is to learn the range of meanings that adults assign to each word. Language acquisition continues well into the school years.

Children acquire more than one language as a result of either simultaneous bilingualism, where the child acquires two (or more) languages from birth, or sequential bilingualism, where the child acquires a second language after having begun to acquire a first language. There are two main hypotheses that propose how children acquire and process two or more languages: the unitary system hypothesis and the separate systems hypothesis.

Learning a language after the age of puberty is an intellectual process involving pronunciation practice, grammar exercises, and vocabulary memorization. The second language is stored in a different part of the brain than the first language. Much of the difficulty encountered in learning the second language is the result of the fossilization of the first-language characteristics (phonological system, morphology, and syntax) in the second language to produce pronunciation and grammatical errors.

- ¹For more information about the brain and its parts, go to any of the following websites and take a virtual tour: <http://psycheducation.org/brain-tours>; www.pbs.org/wnet/brain/3d; www.alz.org/alzheimers_disease_4719.asp; www.thethinkingbusiness.com/brain-tourbrain-facts. While you are looking at these sites, you will notice that there are several places in the brain that are associated with language functions.
- ²Eric Lenneberg, *The Biological Foundations of Language* (New York: Wiley, 1967).
- ³Catherine Hayes, *The Ape in Our House* (New York: Harper & Row, 1951).
- ⁴J. Johnson and E. Newport, "Critical Period Effects in Second Language Learning," *Cognitive Psychology* 21 (1989), 60–99.
- ⁵/я/ is the phonetic symbol for the trilled *r*. See Chapter 2, "Some consonants not used in English."
- ⁶*Chien* (French), *perro* (Spanish), *Hundt* (German), *cane* (Italian).
- ⁷Robert C. Berwick, P. Pietroski, B. Yankama, and N. Chomsky, "Poverty of the Stimulus Revisited," *Cognitive Science* 35 (2011), 1207–1242.
- ⁸Birgit Mampe, Angela D. Friederici, Anne Christophe, and Kathleen Wermke, "Newborns' Cry Melody Is Shaped by Their Native Language," *Current Biology*, 19 (December 15, 2009), 1994–1997.

²Dell Hymes, "On Communication Competence," in Duranti, *Linguistic Anthropology*, 61.

¹⁰Basso, *Western Apache Language and Culture*, 80–98.

¹¹Erika Hoff, *Language Development*, 5th ed. (Belmont, CA: Wadsworth/Cengage Learning, 2014), 366–391.

¹²Hoff, *Language Development*, 372.

¹³Victoria Fromkin, Robert Rodman, and Nina Hyams, *An Introduction to Language*, 10th ed. (Boston, MA: Wadsworth/ Cengage Learning, 2014), 428–429.

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