Preface

There is no single way in which children learn to communicate. Each child follows an individual developmental pattern just as you did. Still, it is possible to describe a pattern of general communication development and of English specifically. This text attempts such descriptions and generalizations but emphasizes individual patterns, too.

New to This Edition

For those readers familiar with older editions, you’ll find much has changed and, hopefully, much that you’ll like. The changes in the ninth edition of Language Development: An Introduction are as follows:

- Continued distribution of bilingual and dialectal development throughout the text rather than in a separate stand-alone chapter. It seemed time to bring these speakers in out of the cold and put them where they belong in recognition of their importance and also the increase in bilingualism in the United States.
- Expanded discussion of children from lower-SES families, including those living in homeless shelters.
- Chapter 4, which carries the burden of explaining cognition and its relationship to speech and language, has been substantially reorganized to aid learning.
- Consolidated information on Theory of Mind in one chapter, as some professors recommended, so the discussion is more coherent.
- Improved readability throughout with more thorough explanations and clarification/simplification of terms, and increased use of headings and bulleted points.
- Weeded out redundancies and asides to make the text less dense.
- Provided more child language examples throughout to better illustrate language structures.
- And, of course, updated research. I spent over eight months just reading before I ever began to edit. For those compulsive types who count number of bibliographic entries, you’ll find several hundred new references along with several retirements.

Phew! That list even makes me tired. My hope is that you’ll also find the new edition very useful.

Those of you who will one day become parents should appreciate the value of this text as a guideline to development. If you plan to work with children with disabilities and without, you’ll find that typical development can provide a model for evaluation and intervention. The developmental rationale can be used to decide on targets for training and to determine the overall remediation approach.

In recognition of the importance of the developmental rationale as a tool and of the changing perspectives in child language development, the ninth edition offers
expanded coverage of preschool and school-age language development. Pragmatics receives increased attention, as does the conversational context within which most language development occurs. If you’re a prospective speech-language pathologist, you will find these developmental progressions valuable when making decisions concerning materials to use with children who have speech and language impairments. As consumers of educational and therapeutic products, you must be especially sensitive to the philosophy that governs the organization of such materials. Many materials claim to be developmental in design but are not. I recall opening one such book to find please and thank you as the first two utterances to be taught to a child with deafness. These words violate many of the characteristics of first words.

Experienced teachers, psychologists, or speech-language pathologists need not rely on such prepackaged materials if they have a good base in communication development. An understanding of the developmental process and the use of a problem-solving approach can be a powerful combination in the hands of creative clinicians.

**Acknowledgments**

A volume of this scope must be the combined effort of many people fulfilling many roles, and this one is no exception.

My first thanks go to all those professionals and students, too numerous to mention, who have corresponded or conversed with me and offered criticism or suggestions for this edition. The overall organization of this text reflects the general organization of my own communication development course and that of professionals with whom I have been in contact.

The professional assistance of several people has been a godsend. The College of Saint Rose is an environment that encourages collaboration and individual professional growth, and it’s a wonderful place to work. This attitude is reflected in the policies and practices of Dean of Education Margaret McLane and my department chair, James Feeney. Other great faculty members include, in alphabetical order, Dave DeBonis, Colleen Karow, Jessica Kisenwether, Megan Overby (now at DeQuese University), Jack Pickering, Anne Rowley, and Julia Unger, and fellow clinical faculty members Director of Clinical Education Jackie Klein, Marisa Bryant, Sarah Coons, Colleen Fluman, Elaine Galbraith, Julie Hart, Barbara Hoffman, Kate Lansing, Jessica Laurenzo, Melissa Spring, and Lynn Stephens. You have all made me feel welcome and valued.

Others included in my list are

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- My former department chair, Dr. Linda House, created an environment at SUNY Geneseo in which I enjoyed working and growing.
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- My dear friend Omid Mohamadi has kept me alert to new possibilities and given me a fresh perspective on the field of speech-language pathology. I look forward to more collaborations.

Additionally, I would like to thank the reviewers of this ninth edition: Brenda L. Beverly, University of South Alabama; Sloane Burgess, Kent State University; Elizabeth
Hunter, Regent University; Tobias A. Kroll, Texas Tech University, Health Sciences Center; and Steven Long, Marquette University.

I would also like to express my love and appreciation to my children, Jason, Todd, and Jessica, who are as beautiful as adults as they were as youngsters; to my gran’kids, Cassidy, Dakota, and Zavier, whose language is sprinkled throughout this book; and to my colleague at O and M Education, Moon Byungchoon.

I’m also indebted to the student researchers who helped me analyze over 175 language samples from which much research continues to flow. The now-SLPs and audiologists are Katherine Allen, Lynda Feenaughty, Annie Feldman, Erin Filippini, Marc Johnson, Andrew Kanuck, Jessica Kroecker, Zhaleh Lavasani-Leliberté, Stephanie Loccisano, Katherine Lyle, Jordan Nieto, Catherine Sligar, Kathryn Wind, and Sara Young.

Robert E. Owens, Jr.
Before we can discuss language development, we need to agree on what language is and what it is not. Don’t worry; as a user of language, you already know a great deal about it. This chapter will organize your knowledge and provide some labels for the many aspects of language you know. Don’t panic—introductory chapters usually contain a lot of terminology so that we can all “speak the same language” throughout the text. When you have completed this chapter, you should understand the following:

- Differences among speech, language, and communication
- Differences among nonlinguistic, paralinguistic, and metalinguistic aspects of communication
- Main properties of language
- Five components of language and their descriptions
- What a dialect is and its relation to its parent language
- Major factors that cause dialects to develop

Important terms:
- antonym
- bilingual
- bound morpheme
- code switch
- communication
- communicative competence
- deficit approach
dialects
discourse
free morpheme
language
linguistic competence
linguistic performance
morpheme
morphology
nonlinguistic cues
paralinguistic codes
phoneme
phonology
pragmatics
register
selection restrictions
semantic features
semantics
sociolinguistic approach
speech
suprasegmental devices
style shifting
synonym
syntax
vernacular
world knowledge

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Language and its processing in your brain are so complex that specialists devote their lives to investigating them. These specialists, called linguists, try to determine the ways in which we use language to communicate. The linguist deduces rules and patterns demonstrated when we, as users of a language, communicate with one another. In a sense, each child is a linguist who must deduce the rules of his or her native language.

You’re already a mature language user but let’s imagine that you encounter human language for the first time. Even if you had the most sophisticated computer-based code-breaking software, it would be impossible to figure out the many ways in which humans use language. For that task, you would need to decipher each of the 6,000 human languages and gain extensive knowledge of human interactions, emotions, and cultures. In other words, language is more than the sum of these parts. To understand language, we must consider it in the natural contexts in which it occurs.

Language is the premier achievement of humans, and using it is something that all of us can do. For example, the average adult English speaker produces about 150 words per minute, selecting each from between 30,000 and 60,000 alternatives stored in the user’s brain, choosing from a myriad of English language grammatical structures, and making less than 0.1% errors! That’s impressive!

This becomes all the more amazing when you realize that the typical 4-year-old child has deciphered much of American English and already has well-developed speech, language, and communication skills. Truly remarkable given the complexity of the task!

You probably don’t recall much about your own language acquisition. One statement is probably true: Unless you experienced difficulty, there was no formal instruction. Congratulations, you did most of it on your own. Now, we’re going to attempt something almost as momentous . . . trying to explain it all!

To appreciate the task involved in language learning, you need to be familiar with some of the terminology that is commonly used in the field. All the terms introduced in this chapter and throughout the text are summarized for you in the Glossary. The remainder of this chapter is devoted to an explanation of these terms. First, we discuss this text in general. Then we distinguish three often confused terms—speech, language, and communication—and look at some special qualities of language itself. Finally, we’ll examine dialects.

This Text and You

Although the full title of this text is Language Development: An Introduction, it is not a watered-down or cursory treatment of the topic. I have attempted to cover every timely, relevant, and important aspect of language development that might be of interest to the future speech-language pathologist, educator, psychologist, child development specialist, or parent. Of necessity, the material is complex and specific.

No doubt you’ve at least thumbed through this book. It may look overwhelming. It’s not. I tell my own students that things are never as bleak as they seem at the beginning of the semester. Within the last 36 years, I have taken more than 5,000 of my own students through this same material with a nearly 100% success rate. Let me try to help you find this material as rewarding to learn as it is to teach.

First, the text is organized into two sections. The first few chapters provide a background that includes terms, theories, and information on the brain and language. I know it’s difficult to have to read this material when you really want to get to the development part, but believe me, all this background is necessary. The main topics of development are contained in the remaining chapters, which are organized sequentially from newborns through adults. Yes, adults are still learning language and adapting to changes.
As with any text, there are a few simple rules that can make the learning experience more fruitful.

- Note the chapter objectives prior to reading the chapter and be alert for this information as you read. That’s the key information.
- Read each chapter in small doses then let it sink in for a while. The worst thing to do is put it off until the night before the test.
- Find the chapter organization described at the end of each chapter’s introduction. This will help you know where we’re going and follow me through the material.
- Take brief notes as you read. Don’t try to write everything down. Stop at natural divisions in the content and ask yourself what was most important. Periodic summarizing is a great learning strategy.
- Review your notes when you stop reading and before you begin again the next time. This process will provide a review and some continuity.
- Try to read a little every day or every other day. That’s a good long-term learning strategy. I say long-term because if you are a speech-language pathology student, you’ll be seeing a lot more about language in your studies.
- Note the key terms in the chapter objectives and try to define them as you read. Each one is printed in boldface in the body of the chapter. Please don’t just thumb through or turn to the Glossary for a dictionary definition. The terms are relatively meaningless out of context. They need the structure of the other information. Context is very important.
- Try to answer the questions throughout each chapter. They’ll help you think more deeply about the material.
- I have tried to de-emphasize linguists, authors, and researchers by placing all citations in parentheses. Unless your professor calls your attention to a specific person, she or he may not wish to emphasize these individuals either. It may be a waste of time to try to remember who said what about language development. “He said–she said” memorization can be very tedious. The exceptions, of course, are individuals mentioned specifically by name in lecture and in the text.
- Make ample use of the weblinks and videos to enhance your reading. Additional information is always good.

I hope that these suggestions will help, although none is a guarantee. Roll up your sleeves, set aside adequate time, and be prepared to be challenged. Actually, your task is relatively simple when compared to the toddler faced with deciphering the language she or he hears.

Speech, Language, and Communication

Child development professionals study the changes that occur in speech, language, and communication as children grow and develop. You might interpret these terms as having similar meanings or as being identical. Actually, they’re very different and denote different aspects of development and use.

SPEECH

Speech is a verbal means of communicating. Other ways of communicating include but are not limited to writing, drawing, and manual signing. The result of planning and executing specific motor sequences, speech is a process that requires very precise
neuromuscular coordination. Each spoken language has specific sounds or phonemes, plus sound combinations that are characteristic of that language. In addition, speech involves other components, such as voice quality, intonation, and rate. These components enhance the meaning of the message. For example, we talk faster when excited.

A highly complicated acoustic or sound event, speech is unlike any other environmental noise. Not even music achieves the level of complexity found in speech. Take a simple word such as "toe" and say it very, very slowly. The initial sound is an almost inhuman "tsch." This is followed by "o . . . w" in which your rounded mouth gradually tightens. Now say "toe" at normal speed and note how effortlessly this is done. Say it again and note how your brain integrates the signal as it comes in, creating the unified "toe." You are a truly amazing being!

Speech is not the only means of face-to-face human communication. We also use gestures, facial expressions, and body posture to send messages. In face-to-face conversation, nonspeech means may carry up to 60% of the information exchanged.

Although humans are not the only animals that make sounds, to my knowledge, no other species can match the variety and complexity of human speech sounds. These qualities are the result of the unique structures of the human vocal tract, a mechanism that is functional months before the first words are spoken. Infants spend much of their first year experimenting with their vocal mechanisms and producing a variety of sounds. Gradually, these sounds come to reflect the language of the child’s environment.

**LANGUAGE**

Individual speech sounds are meaningless noises until some regularity is added. The relationship between individual sounds, meaningful sound units, and the combination of these units is specified by the rules of a language. Language can be defined as a socially shared code or conventional system for representing concepts through the use of arbitrary symbols and rule-governed combinations of those symbols. In other words, the symbols or words are arbitrary but speakers know the meanings of these symbols, which are, in turn, organized in certain ways to convey ideas.

English is a language, as is Spanish or Navajo. Each has its own unique symbols and rules for symbol combinations. Languages are not monolithic. They contain dialects, subcategories of the parent language that use similar but not identical rules. All users of a language follow certain dialectal rules that differ from an idealized standard. For example, I sometimes find myself reverting to former dialectal usage in saying "acros the street" and "open your umbrella."

Languages change and evolve. Interactions between languages naturally occur in bilingual communities. Under certain circumstances, language mixing may result in a new form of both languages being used in that community (Backus, 1999). When I was a child, we said "tidal wave"; now we say "tsunami."

Languages that don’t evolve, grow, and change become obsolete. Sometimes, for reasons other than linguistic ones, languages either flourish or wither. At present, for example, fewer than 80 individuals fluently speak Seneca, a western New York Native American language. The death of languages is not a rare event in the modern world. Languages face extinction as surely as plants and animals. When Kuzakura, an aged woman, died in western Brazil in 1988, the Umutina language died with her. It is estimated that as many as half the world’s 6,000 languages are no longer learned by children. These languages will die. Many others are endangered. Most of these have less than a few thousand users. Only strong cultural and religious ties keep languages such as Yiddish and Pennsylvania Dutch viable. How long they will be secure is anyone’s guess.

This century may see the eradication of most remaining languages. Sadly, it is doubtful that many of the 270 aboriginal languages of Australia—possibly some of the earth’s oldest languages—will survive. The one that gave us the name for the cuddly-looking
koala is already gone. Of the 154 Native American languages now in use, nearly 120 are each spoken by less than a thousand individuals. Other endangered languages include OroWin, an Amazonian language with only three surviving speakers; Gullah, spoken by the descendents of African slaves on islands off the coast of South Carolina and Georgia; and Nushu, a southern Chinese language spoken only by women. The worldwide loss of languages is the result of government policy, dwindling indigenous populations, the movements of populations to cities, mass media, and lack of education of the young. The Internet is also a culprit in the demise of some languages. The need to converse in one language is fostering increasing use of English.

Each language is a unique vehicle for thought. For example, in many Native American languages, the Great Spirit is not a noun as in European languages but a verb. This concept of a supreme being is totally different from that of Europeans. As a speaker of English, can you even imagine god as a verb? It changes the whole concept of a supreme being.

In the rain forest of northwestern Brazil, a language called Pirahã is so unique that it almost defies accepted notions of language. Spoken by approximately 350 people and reflecting their culture, Pirahã consists of only eight consonants and three vowels. Yet it has such a complex array of tones, stresses, and syllable lengths that speakers dispense with their sounds altogether and hum, sing, or whistle using relatively simple grammar by linguistic standards. Instead, meaning of words and phrases depends on changes in pitch and tone.

When we lose a language, we lose an essential part of the human fabric with its own unique perspective. A culture and possibly thousands of years of communication die with that language, the study of which might have unlocked secrets about universal language features, the origins of language, or the nature of thought. Within oral-only languages, the very nature of language itself is different. Words that have been passed on for generations acquire a sacredness, and speech is somehow connected to the Divine.

The death of a language is more than an intellectual or academic curiosity. After a week’s immersion in Seneca, Mohawk, Onondaga, and other Iroquois languages, one man concluded:

> These languages are the music that breathes life into our dances, the overflowing vessels that hold our culture and traditions. And most important, these languages are the conduits that carry our prayers to the Creator . . . . Our languages are central to who we are as a native people.


English is a Germanic variation of a much larger family of Indo-European languages as varied as Italian, Greek, Russian, Hindi, Urdu, Persian, and ancient Sanskrit. Although the Indo-European family is the largest family, as many as 30 others may exist, many much smaller.

Languages can grow as their respective cultures change. English has proven particularly adaptive, changing slowly through the addition of new words. According to the Oxford English Dictionary, approximately 8,000 English words predate the 12th century, including laugh and friend.

Already the language with the largest number of words—approximately 700,000—English adds an estimated half dozen words per day. While many of these are scientific terms, they also include words popular on college campuses, such as selfie (smartphone self-photo), cholo (macho), and dis (scorn). English dictionaries have just recently added 24/7, bubba, blog, headbanger, gaydar, pumped (up), megaplex, racial profiling, slamming, brownfield, piercing, homeschool, netiquette, and sexting. Some words have new meaning. For example, previously only Moses had tablets, now everybody does. These words tell us much about our modern world.
Although most languages can be transmitted by speech, speech is not an essential feature of language. To some extent, the means of transmission influences processing and learning, although the underlying concepts of signing are similar to spoken languages (Emmorey, 1993; Lillo-Martin, 1991).

American Sign Language is not a mirror of American English but is a separate language with its own rules for symbol combinations. As in spoken languages, individually signed units are combined following linguistic rules. Approximately 50 sign languages are used worldwide, including one of the world’s newest languages, Nicaraguan Sign Language, invented by children with deafness to fill a void in their education. On the other side of the earth in Al-sayyid, a Bedouin village in the Negev desert of Israel, another sign language has arisen without the influence of any other spoken or signed languages. Within this village approximately 150 individuals are deaf and use their language to communicate with each other and with hearing members of the community (Boswell, 2006).

Following is the American Speech-Language-Hearing Association definition of language (Committee on Language, 1983). The result of a committee decision, this definition has a little of everything, but it also is very thorough.

- Language is a complex and dynamic system of conventional symbols that is used in various modes for thought and communication.
- Language evolves within specific historical, social, and cultural contexts.
- Language, as rule-governed behavior, is described by at least five parameters—phonologic, morphologic, syntactic, semantic, and pragmatic.
- Language learning and use are determined by the intervention of biological, cognitive, psychosocial, and environmental factors.
- Effective use of language for communication requires a broad understanding of human interaction including such associated factors as nonverbal cues, motivation, and sociocultural roles.

Languages exist because users have agreed on the symbols to be used and the rules to be followed. This agreement is demonstrated through language usage. Thus, languages exist by virtue of social convention or use. Just as users agree to follow the rules of a language.
system, they can agree to change the rules. For example, the *eth* found as an ending on English verbs (asketh) in the King James Version of the Bible has disappeared from use. New words can be added to a language; others fall into disuse. Words such as *DVD* and *blog* were uncommon just a few years ago. Users of one language can borrow words from another. For instance, despite the best efforts of the French government, its citizens seem to prefer the English word *jet* to the more difficult, though lyrical, *avion de reaction*.

English also has borrowed heavily from other languages, while they have felt free to borrow in return. Here are a few English words taken from other languages:

- *Raccoon* ( Powhatan, a Native American language)
- *Jaguar* (Tupi-Guarani languages of the Amazon)
- *Immediate* (French)
- *Democracy* (Greek)
- *Tycoon* (Japanese)
- *Sofa* (Arabic)
- *Piano* (Italian)

In the process, meanings and words are changed slightly to conform to linguistic and cultural differences. More recently, English has incorporated words such as *tsunami* (Japanese), *barrio* (Spanish), *jihad* (Arabic), *sushi* (Japanese), and *schlep* (Yiddish).

Even strong, vibrant, firmly entrenched languages struggle against the embrace of the Internet and its accompanying English. Formal Spanish has given way to Cyber-Spanish with words such as *escapar* (escape) instead of *salir* and *un emilio* or *un correo electronico* instead of *un correo electronico*.

English has become the language of worldwide commerce and the Internet. Possibly a billion people speak English as a second language, most in Asia. As they learn English, these speakers are making it their own, modifying it slightly with the addition of words from their languages and incorporating their own intonational and structural patterns. In the near future, it may be more appropriate to think of English as a family of similar languages.

Braj Kachru, a professor in India, questions the very idea that English is inevitably linked to Western culture. He hypothesizes that English can be as adaptable to local culture as a musical instrument is to music. More succinctly put, English no longer belongs to the English. According to Professor Kachru (2005), the over 500 million Asian speakers of English should direct the language’s course because the number of speakers in traditionally English-speaking countries is declining. The “Englishes” of the future may be hybrids or even new languages that may not be mutually understood by users from different cultures.

The socially shared code of English or any language allows the listener and speaker or writer and reader of the same language to exchange information. Internally, each uses the same code. The shared code is a device that enables each to represent an object, event, or relationship. Let’s see how this is done.

Close your eyes for a few seconds and concentrate on the word *ocean*. While your eyes were closed, you may have had a visual image of surf and sand. The concept was transmitted to you and decoded automatically. In a conversation, listener and speaker switch from encoding to decoding and back again without difficulty. Words, such as *ocean*, represent concepts stored in our brains.

Each user encodes and decodes according to his or her shared concept of a given object, event, or relationship; the actual object, event, or relationship does not need to be present. Let’s assume that you encounter a priest. From past experience, you recognize his social role. Common elements of these experiences are *Catholic*, *male*, and *clergy*. As you pass, you draw on the appropriate symbol and encode, “Morning, Father.” This representational process is presented in Figure 1.1. The word may also suggest a very different meaning, depending on the experiences of each party. Let’s assume for a moment...
that your biological father is an Episcopal minister. You see him on the street in clerical
garb and say, “Good morning, Father.” A passerby, unaware of your relationship, will
assume something very different from the meaning that you and your father share. Cod-
ing is a factor of the speaker’s and listener’s shared meanings, the linguistic skills of each,
and the context in which the exchange takes place.

Individual linguistic units communicate little in isolation. Most of the meaning or
information is contained in the way symbols are combined. For example, “Teacher Jim a
is” seems a meaningless jumble of words. By shifting a few words, however, we can cre-
ate “Jim is a teacher.” Another modification could produce “Is Jim a teacher?”—a very
different sentence. Language rules specify a system of relationships among the parts. The
rules for these relationships give language order and allow users to predict which units
or symbols will be used. In addition, the rules permit language to be used creatively.
Symbols and rules governing their use help us to create utterances.

Language should not be seen merely as a set of static rules. It is a process of use and
modification within the context of communication. Language is a tool for social use.

COMMUNICATION

Both speech and language are parts of a larger process called communication. Communi-
cation is the exchange of information and ideas, needs and desires, between two or
more individuals. The process is an active one that involves encoding, transmitting, and
decoding the intended message. Figure 1.2 illustrates this process. It requires a sender
and a receiver, and each must be alert to the informational needs of the other to ensure
that messages are conveyed effectively and that intended meanings are preserved. For
example, a speaker must identify a specific female, such as “Have you seen Catalina?”
prior to using the pronoun she, as in “She was supposed to meet me.” The probability of
message distortion is very high, given the number of ways a message can be formed and
the past experiences and perceptions of each participant. The degree to which a speaker
is successful in communicating, measured by the appropriateness and effectiveness of
the message, is called communicative competence. The competent communicator is

FIGURE 1.1 Symbol–Referent Relationship

The concept is formed from the common elements of past experiences. The common elements of
these experiences form the core of the concept. When a referent is experienced, it is interpreted in
terms of the concept and the appropriate symbol applied.
able to conceive, formulate, modulate, and issue messages and to perceive the degree to which intended meanings are successfully conveyed.

Human communication is a complex, systematic, collaborative, context-bound tool for social action. Complexity can be demonstrated by the multifaceted and multifunctional aspects of the process. These include all aspects of communication and language plus additional mental processes, such as memory and planning, exercised within the cultural beliefs, situational variables, and social conventions of the individual participants. Although complex, communication is a systematic pattern of behavior.

Conversations don't consist of disconnected, independent utterances. Instead, communication is collaborative. Partners actively coordinate construction of a joint dialogue as they negotiate to understand each other's meanings.

This process occurs within a specific cultural context that influences interpretation of linguistic units and speaker behaviors. The context is variable, changing minute by minute as the physical setting, partners, and topics change. I once introduced myself to a young Korean boy as Bob, unaware that bob means rice in Korean and that being someone's rice is an idiom for being his servant. Imagine how thrilled — and misinformed — he was when I, his supposed servant, subsequently hoisted him upon my shoulders as his mother and I headed down the street.

Finally, communication is a tool for social action. We accomplish things as we communicate. Let’s eavesdrop on a conversation:

**Speaker 1:** Are you busy?
**Speaker 2:** No, not really.
**Speaker 1:** Well, if you could, please take a look at my lesson plan.
**Speaker 2:** Okay.

Speaker 1 used politeness to accomplish his goals. By prefacing his request with a question, he invited speaker 2 to respond in a positive way. That’s why gran’ma told you that you could catch more flies with honey than with vinegar.
Paralinguistic Cues

Speech and language are only a portion of communication. Other aspects of communication that may enhance or change the linguistic code can be classified as paralinguistic, nonlinguistic, and metalinguistic. These relationships are illustrated in Figure 1.3.

Paralinguistic codes, including intonation, stress or emphasis, speed or rate of delivery, and pause or hesitation, are superimposed on speech to signal attitude or emotion. All components of the signal are integrated to produce the meaning. Intonation, the use of pitch, is the most complex of all paralinguistic codes and is used to signal the mood of an utterance. For example, falling or rising pitch alone can signal the purpose of an utterance, as in the following example:

You’re coming, aren’t you. ↓ (Telling)
You’re coming, aren’t you ↑ (Asking)

A rising pitch can change a statement into a question. Pitch can signal emphasis, asides, emotions, importance of the information conveyed, and the role and status of the speaker.

Stress is also employed for emphasis. Each of us remembers hearing, “You will clean your room!” to which you may have responded, “I did clean my room!” The will and did are emphasized.

Speaking rate varies with our state of excitement, familiarity with the content, and perceived comprehension of our listener. In general, we tend to talk faster if we are more excited, more familiar with the information being conveyed, or more assured that our listener understands our message.

Pauses may be used to emphasize a portion of the message or to replace the message. Even young children recognize that a short maternal pause after a child’s request usually signals a negative reply. Remember asking, “Can Chris sleep over tonight?” A long silence meant that your plans were doomed.

Pitch, rhythm, and pauses may be used to mark divisions between phrases and clauses. Combined with loudness and duration, pitch is used to give prominence to certain syllables and to new information.

**Figure 1.3** Relationships of Speech, Language, and Communication

Communication is accomplished through linguistic and paralinguistic codes and many means of transmission, such as speech, intonation, gestures, and body language.
Paralinguistic mechanisms are called **suprasegmental devices** because they can change the form and meaning of a sentence by acting across elements, or segments, of a sentence. As mentioned, a rising pitch can change a statement into a question without altering the arrangement of words. Similarly, “I did my homework” and “I *did* my homework” convey different emotions.

**Nonlinguistic Cues**

Gestures, body posture, facial expression, eye contact, head and body movement, and physical distance or proxemics convey information without the use of language and are called **nonlinguistic cues**. The effectiveness of these devices varies with users and between users. We all know someone who seems to gesture too much or to stand too close while communicating. Some nonlinguistic messages, such as a wink, a grimace, a pout, or folded arms, can convey the entire message.

As with language, nonlinguistic cues vary with the culture. Perfectly acceptable gestures in one culture may be considered offensive in another. Table 1.1 presents a list

<table>
<thead>
<tr>
<th><strong>Gesture</strong></th>
<th><strong>Other Interpretations</strong></th>
<th><strong>Countries in Which Unacceptable</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Thumbs-up</td>
<td></td>
<td>Australia, Nigeria, Islamic countries, such as Bangladesh</td>
</tr>
<tr>
<td>A-OK</td>
<td>Japan: <em>money</em></td>
<td>Latin American countries</td>
</tr>
<tr>
<td></td>
<td>France: <em>zero, worthless</em></td>
<td></td>
</tr>
<tr>
<td>Victory or peace sign</td>
<td></td>
<td>England (if palm toward body)</td>
</tr>
<tr>
<td>Hailing a waiter (one finger raised)</td>
<td>Germany: <em>two</em></td>
<td>Japan</td>
</tr>
<tr>
<td>Beckoning curled finger</td>
<td></td>
<td>Yugoslavia, Malaysia, Indonesia, Australia</td>
</tr>
<tr>
<td>Tapping forehead to signify “smart”</td>
<td>Netherlands: <em>crazy</em></td>
<td></td>
</tr>
<tr>
<td>Stop</td>
<td></td>
<td>Greece, West Africa</td>
</tr>
<tr>
<td>Hands in the pockets</td>
<td></td>
<td>Belgium, Indonesia, France, Finland, Japan, Sweden</td>
</tr>
<tr>
<td>Strong handshake</td>
<td>Middle East: <em>aggression</em></td>
<td></td>
</tr>
<tr>
<td>Good-bye</td>
<td>Europe and Latin America: <em>no</em></td>
<td></td>
</tr>
<tr>
<td>Crossing legs and exposing sole of the foot</td>
<td>Southeast Asia</td>
<td></td>
</tr>
<tr>
<td>Nodding head for agreement</td>
<td>Greece, Yugoslavia, Turkey, Iran, Bengal: <em>No</em></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Information from Axtell (1991).*
of common American gestures considered rude, offensive, or insulting in other cultures. Luckily, the smile is a universal signal for friendliness.

**Metalinguistic Skills**

The ability to talk about language, analyze it, think about it, judge it, and see it as an entity separate from its content or out of context is termed *metalinguistics*. For example, learning to read and write depends on metalinguistic awareness of the component units of language—sounds, words, phrases, and sentences. Metalinguistic skills also are used to judge the correctness or appropriateness of the language we produce and receive, thus signaling the status of the transmission or the success of communication.

**The Beginnings of Human Communication**

As you can see, like language, communication is quite complex, yet it is almost impossible not to communicate. Even if you tried not to communicate, your behavior would communicate that you do not want to communicate.

When and how did human communication diverge from other primate communication? Unfortunately, speech doesn’t leave any tangible evidence. Our best guess is that spoken language appeared around 50,000–100,000 years ago. The first “words” may have been imitations of animal sounds or may have accompanied emotion, such as crying, and actions, such as a grunt when attempting to move something heavy.

Although we can’t answer the question more precisely, language itself may offer a place to begin an explanation. If we look back at the characteristics of language, the first was that language is a social tool. If we take this further, we can conclude that language is a social means for achieving social ends based on shared understanding and purpose (Tomasello, 2008). Thus, human communication is fundamentally cooperative. Herein may be our answer.

The cooperative nature of human communication and the cooperative structure of human social interaction and culture are closely related. Early forms of communication were most likely gestural in nature, including pointing and pantomiming (Tomasello, 2008). The cooperative nature of these gesture differs qualitatively from other primate communication, which is primarily requesting to fill immediate needs. In contrast, cooperative communication requires socio-cognitive skills of shared intentionality. While chimpanzees, with whom we share a common ancestor, do have and understand individual intentionality, most do not have the skills of shared intentionality, such as joint goals and joint attention that are necessary for cooperative communication.

Early humans were probably driven to cooperate because of fear of hunger or the high risk of being eaten by predators (Bickerton, 2003). Thus, human cooperative communication resulted from a biological adaptation for collaborative activities; reciprocating could help ensure your survival.

Vocal communication probably emerged after conventionalized gestures. Most likely the earliest vocal accompaniments to gestures were emotional or added sound effects to some already meaningful action-based gestures or other actions. Some vocalizations may have accompanied specific acts such as mourning or imitated animal sounds. At some point, the vocalizations took on meaning of their own. Unlike ape communication, human vocalization is not context-bound or involuntary and this characteristic may be related to the need for vocal communication. While pointing works in context, we must rely on some other signal to communicate about something that is not present. In addition, vocal communication freed the hands for other purposes (Goldin-Meadow, 2005).

When we compare a gorilla skull to a Neanderthal skull from approximately 60,000 years ago, one striking difference can be noted in the vocal tract of the early human. The reconfigured vocal tract suggests that some consonant-like sounds were possible. More
modern vocal tracts appear about 35,000 years ago. When compared to other primates, humans have more vertical teeth, more intricately muscled lips, a relatively smaller mouth, a greater closure of the oral cavity from the nasal, and a lower larynx or “voice box.” All of these adaptations make speech as we know it possible. Most importantly, humans possess a large and highly specialized brain compared to their overall size.

It is the rules that enable humans to communicate. Sounds can be combined, recombined, broken down, and combined another way to convey different meanings. A dog’s bark cannot be manipulated in this way and is a relatively fixed form.

Grammar arose to express more complex relationships. This is especially important as communication moves from requesting to informing and information sharing (Tomasello, 2008).

Properties of Language

Linguists attempt to describe the properties or characteristics of language. In general, language is a social interactive tool that is both rule governed and generative, or creative.

**LANGUAGE IS A SOCIAL TOOL**

It does little good to discuss language outside the framework provided by communication. While language is not essential for communication, communication is certainly an essential and defining element of language. Without communication, language has no purpose.

As a shared code, language enables users to transmit ideas and desires to one another. In fact, language has but one purpose: to serve as the code for transmissions between people.

Overall, language reflects the collective thinking of its culture and, in turn, influences that thinking. In the United States, for example, certain words, such as democracy, reflect cultural meanings and emotions and, in turn, influence our concepts of other forms of government. The ancient Greek notion of democracy was somewhat different and similarly influenced the Greeks’ thinking.

Likewise, at any given moment, language in use is influenced by what precedes it and influences what follows. The utterance “And how’s my little girl feeling this morning?” only fits certain situations that define the appropriate language use. It would not be wise to use this utterance when meeting the Queen of England for the first time. In turn, the sick child to whom this is addressed has only limited options that she can use to respond. Responses such as, “Go directly to jail; do not pass Go” and “Mister Speaker, I yield the floor to the distinguished senator from West Virginia,” while perfectly correct sentences, just don’t fit the situation. The reason is that they do not continue the communication but rather cause it to break down.

To consider language without communication is to assume that language occurs in a vacuum. It is to remove the very raison d’être for language in the first place.

**LANGUAGE IS A RULE-GOVERNED SYSTEM**

The relationship between meaning and the symbols employed is an arbitrary one, but the arrangement of the symbols in relation to one another is nonarbitrary. This nonarbitrary organizational feature of language demonstrates the presence of underlying rules or patterns that occur repeatedly. These shared rule systems allow users of a language to create and comprehend messages.
Language includes not only the rules but also the process of rule usage and the resulting product. For example, a sentence is made up of a noun plus a verb, but that rule tells us nothing about the process by which you select the noun and verb or the seemingly infinite number of possible combinations using these two categories.

A language user’s underlying knowledge about the system of rules is called his or her **linguistic competence**. Even though the user can’t state many of the rules, performance demonstrates adherence to them. The linguist observes human behavior in an attempt to determine these rules or operating principles.

If you have ever listened to an excited speaker or a heated argument, you know that speakers do not always observe the linguistic rules. In fact, much of what we, as mature speakers, say is ungrammatical. Imagine that you have just returned from the New Year’s celebration at Times Square. You might say the following:

> Oh, wow, you should have . . . you wouldn’t be-believe all the . . . never seen so many people. We were almost . . . ah, trampled. And when the ball came down . . . fell, all the . . . Talk about yelling . . . so much noise. We made a, the mistake of . . . can you imagine anything as dumb as . . . well, it was crazy to drive.

It’s ungrammatical but still understandable. So is much of what we say.

Linguistic knowledge in actual usage is called **linguistic performance**. A user’s linguistic competence must be deduced from his or her linguistic performance, such as that of our New Year’s reveler. You cannot measure linguistic competence directly.

There are many reasons for the discrepancy between competence and performance in normal language users. Some constraints are long-term, such as ethnic background, socioeconomic status, and region of the country. These account for dialects and regionalisms. We are all speakers of some dialectal variation, but most of us are still competent in the standard or ideal dialect. Dialectal speakers do not have a language disorder, just a different way of saying things.

Even though much that is said is ungrammatical, native speakers have relatively little difficulty decoding messages. If a native speaker knows the words being used, he or she can apply the rules in order to understand almost any sentence encountered. In actual communication, comprehension is influenced by the intent of the speaker, the context, the available shared meanings, and the linguistic complexity of the utterance.

A sentence such as “Chairs sourly young up swam” is ungrammatical. It violates the rules for word order. Native speakers notice that the words do not fall into predictable patterns. When rearranged, the sentence reads “Young chairs swam sourly up.” This is now grammatical in terms of word order but meaningless; it doesn’t make sense. Other rules allow language users to separate sense from nonsense and to determine the underlying meaning. Although “Dog bites man” and “Man bites dog” are very similar in that each uses the same words, the meanings of the two sentences are very different. Only one will make a newspaper headline. Likewise, a single sentence may have two meanings. For example, the sentence “The shooting of the hunters was terrible” can be taken two ways: either they shot poorly or someone shot them. Language users must know several sets of rules to make sense of what they hear or read.

**Learning the Rules**

Children learn language rules by actually using them to encode and decode. The rules learned in school are the “finishing touches.” For example, a preschool child demonstrates by using words that he or she knows what a noun is long before he or she can define the term or even name it.

On one family trip, we passed the time with a word game. My 5-year-old daughter was asked to provide a noun. Immediately, she inquired, “What’s that?” In my best
teacher persona, I patiently explained that a noun was a person, place, or thing. She replied, “Oh.” After some prodding, she stated, “Then my word is ‘thing.’” Despite her inadequate understanding of the formal definition of a noun, my daughter had demonstrated for years in her everyday use that she knew how to use nouns.

**LANGUAGE IS GENERATIVE**

Language is a generative system. The word *generative* has the same root as *generate*, which means to produce, create (as in the word *Genesis*), or bring into existence. Thus, language is a productive or creative tool. A knowledge of the rules permits speakers to generate meaningful utterances. From a finite number of words and word categories, such as nouns, and a finite set of rules, speakers can create an almost infinite number of sentences. This creativity occurs for several reasons:

- Words can refer to more than one entity.
- Entities can be called more than one name.
- Words can be combined in a variety of ways.

Think of all the possible sentences you could create by combining just the nouns and verbs you know. When this task is completed, you could modify each sentence by adding adverbs and adjectives, articles and prepositions, and by combining sentences or rearranging words to create other variations.

The possibilities for creating new sentences are virtually endless. Consider the following novel sentence:

Large elephants danced gracefully beneath the street lights.

Even though you have probably never seen this utterance before, you understand its meaning because you know the linguistic rules. Try to create your own novel utterance. The process will seem difficult, and yet you form novel utterances every day and are not consciously aware of using any effort. In fact, much of what you said today was novel or new. I don’t mean to imply that sentences are never repeated. Polite social or ritualistic communication is often repetitious. How frequently have you said the following sentences?

- How are you?
- Thank you very much.
- Can I, Mom, please?
- See you soon.

These utterances aside, you create whatever sentences you desire whenever you want. Children do not learn all possible word combinations. Instead, they learn rules that govern these combinations. As a young child, you deduced the rules by hearing others and trying out different types of sentences yourself. Knowing the linguistic rules enables you to understand and to create or *generate* an infinite variety of sentences.

**OTHER PROPERTIES**

Human language is also reflexive, meaning we can use language to reflect on language, its correctness and effectiveness, and its qualities. We referred to this aspect of language previously as metalinguistics. Other animals cannot reflect on their own communication. Without this ability, this book would be impossible to produce.
An additional property of language is displacement or the ability to communicate beyond the immediate context. As far as we know, your dog’s bark is not about something that he remembers of interest from last week. You, on the other hand, can discuss tomorrow, last week, or last year, or events in the dim past of history in which you were not a participant.

Although not always obvious from inside a language, the symbols used in a language are arbitrary, another property of language. There is, for example, nothing in the word cat that would suggest the animal to which it applies. Except for some words, such as squash and cuckoo that suggest a relationship between the sound and the action or thing to which a word refers, there is no naturally obvious relationship. The relationship is arbitrary.

Components of Language

An exceedingly complex system, language can best be explained by breaking it down into its functional components (Figure 1.4). We typically divide language into three major, although not necessarily equal, components: form, content, and use. Form includes syntax, morphology, and phonology, the components that connect sounds and symbols in order. Content encompasses meaning or semantics, and use is termed pragmatics. These five components—syntax, morphology, phonology, semantics, and pragmatics—are the basic rule systems found in language.

As each of us uses language, we code ideas (semantics); that is, we use a symbol—a sound, a word, and so forth—to stand for an event, object, or relationship. To communicate these ideas to others, we use certain forms, which include the appropriate

- sound units and sequences (phonology),
- word order and relationships (syntax), and
- words and word beginnings (un-, non-) and endings (-s, -ed) (morphology).
Components of Language

Speakers use these components to achieve certain communication ends, such as gaining information, greeting, or responding (pragmatics). Let’s examine the five components of language in more detail.

SYNTAX

The form or structure of a sentence is governed by the rules of syntax. These rules specify word, phrase, and clause order; sentence organization; and the relationships among words, word classes, and other sentence elements. Syntax specifies which word combinations are acceptable, or grammatical, and which are not. For example, the syntax of English explains why “Maddi has thrown the ball” is a possible sentence, while “Maddi the ball has thrown” sounds awkward.

Sentences are organized according to their overall function; declaratives, for example, make statements, and interrogatives form questions. The main elements of a sentence are noun and verb phrases, each composed of various word classes (such as nouns, verbs, adjectives, and the like).

Each sentence must contain a noun phrase and a verb phrase. The mandatory features of noun and verb phrases are a noun and a verb, respectively. The short biblical verse “Jesus wept” is a perfectly acceptable English sentence: It contains both a noun phrase and a verb phrase. The following, however, is not a complete sentence, even though it is much longer:

The grandiose plan for the community’s economic revival based on political cooperation of the inner city and the more affluent suburban areas

This example contains no verb and thus no verb phrase; therefore, it does not qualify as a sentence.

Within noun and verb phrases, certain word classes combine in predictable patterns. For example, articles such as a, an, and the appear before nouns, and adverbs such as slowly modify verbs. Some words may function in more than one word class. For example, the word dance may be a noun or a verb. Yet there is no confusion between the following sentences:

The dance was attended by nearly all the students.
The children will dance to earn money for charity.

The linguistic context of each sentence clarifies any confusion.

Syntax can be conceptualized as a tree diagram (Figure 1.5). Each noun phrase or verb phrase included in a sentence contains various word classes. In a given phrase, word classes may be deleted or added. As long as the noun and verb remain, a sentence is possible. This hierarchical structure permits boundless elaboration within the confines of the syntactic rules. Obviously, the tree diagram in Figure 1.5 has only limited use. Flexible use of language would require hundreds, if not thousands, of other possible diagrams. Children don’t memorize diagrams; rather they learn rules for ways of constructing them.

As language users, we sometimes get into difficulty when we must follow prescribed language rules. This usually occurs in writing. Spoken language is much more informal than written language and less constrained. In the 19th century, formal grammar guides were written, often prescribing rules used by the upper class. As a result, today we are saddled with the distinction in formal writing between who and whom, the incorrectness of using since to mean because, the inadmissibility of the split infinitive (to finish quickly is fine, but not to quickly finish), and the don’t-end-a-sentence-with-a-preposition rule.
Regarding the latter, Winston Churchill quipped, “That is the type of arrant pedantry up with which I shall not put.” Grammatically, he’s correct, but boy, is it awkward.

Languages can be divided roughly into those with so-called free word order and those with word-order rules. The Australian aboriginal language, Warlpiri, is relatively free. The same sentence may be expressed with several different word orders. Among word-order languages, rules fall into three classes based on the order of the subject, the verb, and the object. English is an example of the basic subject-verb-object (SVO) word order (*She eats cookies*). In contrast, Dutch, Korean, and Japanese have a basic verb-final form (SOV). The third type, represented by Irish, is verb-subject-object (VSO).

**MORPHOLOGY**

Morphology is concerned with the internal organization of words. Words consist of one or more smaller units called morphemes. A morpheme is the smallest grammatical unit and is indivisible without violating the meaning or producing meaningless units. Therefore, *dog* is a single morpheme because *d* and *og* are meaningless alone. If we split the word into *do* and *g*, we have a similar situation because there is nothing in *dog* that includes the meaning of *do*, and *g* is meaningless alone. Most words in English consist of one or two morphemes. In contrast, Mohawk, found in northern New York and southern Quebec, constructs words of several morphemes strung together.

Morphemes are of two varieties, free and bound (Figure 1.6). Free morphemes are independent and can stand alone. They form words or parts of words. Examples of free morphemes are *dog*, *big*, and *happy*. Bound morphemes are grammatical markers that cannot function independently. They must be attached to free morphemes or to other
Components of Language

BOUND MORPHEMES

FREE
- boy
- girl
- car
- idea
- run
- walk
- big
- quick

BOUND

Derivational
- Prefixes
- un-
- non-
- in-
- pre-
- trans-

- Suffixes
- -ly
- -ist
- -er
- -ness
- -ment

Inflectional
- -s
- 's
- -ing
- -ed

bound morphemes. Examples include -s, -est, un-, and -ly, meaning plural, most, negative, and manner, respectively. By combining these free and bound morphemes, we can create dogs, biggest, and unhappily. Bound morphemes are attached to nouns, verbs, and adjectives. Furthermore, bound morphemes can be either derivational or inflectional in nature.

English derivational morphemes include both prefixes and suffixes. Prefixes precede the free morpheme and suffixes follow. Derivational morphemes change whole classes of words. For example, the suffix -ly may be added to an adjective to create an adverb, and -ness may be added to an adjective to create a noun: mud, madly, madness.

Inflectional morphemes are suffixes only. They change the state or increase the precision of the free morpheme. In English, inflectional morphemes include tense markers (such as -ed); plural markers; possessive markers (-’s, -s’); and the third person, singular present-tense verb ending -s as in “she walks.”

Languages differ in their relative dependence on syntax and morphology. In English, word order is used more than morphological additions to convey much of the meaning of a sentence. Hungarian, in contrast, has an extensive morphological system and considerable word-order variability. Sentences can be expressed in almost every possible order. Chinese has no inflectional markings of any kind and still permits considerable word order variation. Listeners must rely on probability, context, intonation, and common sense.

PHONOLOGY

Phonology is the aspect of language concerned with the rules governing the structure, distribution, and sequencing of speech sounds and the shape of syllables. Each language employs a variety of speech sounds or phonemes.

A phoneme is the smallest linguistic unit of sound that can signal a difference in meaning. There is an obvious difference in the initial sounds in pea and see because each begins with a different phoneme. When transcribing phonemes we place them within slashes, such as /p/. This practice follows the International Phonetic Alphabet which is discussed in more detail in Appendix A. The /d/ and /l/ phonemes are different enough
to be considered as distinct phonemes. Each can signal a different meaning if applied to other sounds. For example, the meanings of dog and log are quite different, as are those of dock and lock and pad and pal. Phonemes are classified by their acoustic or sound properties, as well as by the way they are produced (how the airstream is modified) and their place of production (where along the vocal tract the modification occurs).

Phonemes are actually families of very similar sounds. Allophones are individual members of these families of sounds. Each allophone differs slightly from another but not enough to sound like a different phoneme. If you repeat the /p/ sound 10 times, each production will vary slightly for a number of physiological reasons. In addition, the /p/ sound in pea differs from that in poor or soup because each is influenced by the surrounding sounds. Even so, each /p/ sound is similar enough so as not to be confused with another phoneme. Thus, as mentioned previously, /p/ is a distinct English phoneme.

English has approximately 43 phonemes, give or take a few for dialectal variations (see Appendix A). Actually, the human speech mechanism can make approximately 600 possible speech sounds. Say the word butter at normal speed and note the middle “tt” sound. It’s not really a /t/ or a /d/, but somewhere in between, with elements of both. Except in rapid speech, English doesn’t recognize this difference. The Thai language does and treats this sound as a separate phoneme. In English, it’s just a convenient way to pronounce words quickly and is an allophone of /t/.

Phonological Rules

Phonological rules govern the distribution and sequencing of phonemes within a language. Without the phonological rules, the distribution and sequencing of phonemes would be random and most likely meaningless. The organization of phonemes is not the same as speech, which is the actual mechanical act of producing the sounds.

Distributional rules describe which phonemes can be employed in various positions in words. For example, in English the ng sound, which is found in ring and considered to be a single phoneme(/n/), never appears at the beginning of an English word. In contrast, sequencing rules determine which sounds may appear in combination. The sequence /dn/, for example, may not appear back to back in the same syllable in English.

Sequencing rules also address the sound modifications made when two phonemes appear next to each other. For example, the -ed in jogged, pronounced as /d/, is different from the -ed in walked, which is pronounced as /t/. On other occasions, the distributional and sequencing rules both apply. The combination /nd/, for example, may not begin a word but may appear elsewhere, as in hand. The word stew is perfectly acceptable in English. Snow is not an English word but would be acceptable; sadew, however, could never be acceptable because in English words cannot begin with sd.

SEMANTICS

Semantics is a system of rules governing the meaning or content of words and word combinations. Some units are mutually exclusive, such as man and woman; a human being is not usually classified as both. Other units overlap somewhat, such as female, woman, and gal. Not all females are women; some are girls. Many women would find it offensive to be called “gal.”

It is useful at this point to make a distinction between world knowledge and word knowledge. World knowledge refers to an individual’s autobiographical and experiential understanding and memory of particular events. In contrast, word knowledge contains word and symbol definitions and is primarily verbal. Word knowledge forms each person’s mental dictionary or thesaurus called a lexicon.

The two types of knowledge are related. Word knowledge is usually based, in part, on world knowledge. World knowledge is a generalized concept formed from several
particular events. In part, your concept of dog has been formed from several encounters with different types of dogs.

With more life experience, our knowledge becomes less dependent on particular events. The resultant generalized concepts form the base for semantic or word knowledge. Events become somewhat generalized, or separated from the original context. Thus, the general word dog does not refer to any particular type.

As we mature further, concepts in world knowledge may be formed without firsthand experience. For example, very few of us have experienced a tornado firsthand but we know what the word means. Mature language meanings reflect individual knowledge and the cultural interpretation placed on this knowledge.

As we converse with other users of the same language, we sharpen our concepts and shape them to resemble more closely similar concepts in others. In this way, we come to share definitions with others, thus making clear, concise, comprehensible communication possible.

Concept development results in increased validity, status, and accessibility. Validity is the amount of agreement between a language user’s concept and the shared concept of the language community. Status refers to alternative referents: For example, canine can be substituted easily for the concept dog, and dog can be used to refer to the dry, hot, dog days of summer; to a dog-eared book; or to being dog-tired. Accessibility relates to the ease of retrieval from memory and use of the concept. In general, the more you know about a word and the more you use it, the easier it is to access.

Each word meaning contains two elements—semantic features and selection restrictions—drawn from the core concept. Semantic features are aspects of the meaning that characterize the word. For example, the semantic features of mother include parent and female. One of these features is shared with father, the other with woman, but neither word contains both features. Selection restrictions are based on these specific features and prohibit certain word combinations because they are meaningless or redundant. For example, male mother is meaningless because one word has the feature male and the other the feature female; female mother is redundant because biological mothers are female, at least for the foreseeable future.

In addition to an objective denotative meaning, there is a connotative meaning containing subjective features or feelings. Thus, whereas the semantic knowledge of the features of dog may be similar, I may have encountered several large, vicious examples that you have not and may therefore be more fearful of dogs than you. In this way, our meanings differ slightly. Throughout life, language users acquire new features, delete old features, and reorganize the remainder to sharpen word meanings.

Word Relationships

Word meanings are only a portion of semantics and are not as important as the relationships between symbols. One important relationship is that of common or shared features. The more features two words share, the more alike they are. Words with almost identical features are called synonyms. Some examples are abuse and misuse, dark and dim, heat and warmth, and talk and speak.

Antonyms are words that differ only in the opposite value of a single important feature. Examples include up and down, big and little, and black and white. Big and little both describe size but are opposite extremes.

Knowledge of semantic features provides a language user with a rich vocabulary of alternative words and meanings. To some extent, this knowledge is more important than the overall number of words in a language user’s vocabulary. Because words may have alternative meanings, users must rely on additional cues for interpretation of messages.

Sentence meanings are more important than individual word meanings because sentences represent a meaning greater than the sum of the individual words. A sentence
represents not only the words that form that sentence but also the relationships among those words. Mature language users generally recall the overall sentence meaning better than the sentence's specific form.

**PRAGMATICS**

When we use language to affect others or to relay information, we make use of pragmatics. Pragmatics concentrates on language as a communication tool that is used to achieve social ends. In other words, pragmatics is concerned with the way language is used to communicate rather than with the way language is structured.

When we go beyond individual isolated sentences to look at how a set of utterances is used to convey a message, we are in the realm of something called discourse (Ska, Duong, & Joanette, 2004; Ulatowska & Olness, 2004). Think of discourse as a language activity, such as having a conversation or telling a narrative. That’s pragmatics too.

Pragmatics consists of the following:

- Communication intentions and recognized ways of carrying them out
- Conversational principles or rules
- Types of discourse, such as narratives and jokes, and their construction

More than in the other components of language, successful pragmatics requires understanding of the culture and of individuals.

In order to be valid, speech must do three things:

1. Involve the appropriate persons and circumstances.
2. Be complete and correctly executed by all participants.
3. Contain the appropriate intentions of all participants.

“May I have a donut, please” is valid only when speaking to a person who can actually get you one and in a place where donuts are found.

Sometimes the very act of saying something makes it so:

I **apologize** for my behavior.
I **christen** this ship the U.S.S. **Schneider**.
I now **pronounce** you husband and wife.

Again, certain conditions must be met before each is valid. When someone apologizes but is overjoyed by another’s discomfort or when a child or nondesignated adult pronounces a couple husband and wife, the act is invalidated.

Not all speech performs an act. For example, saying “John should apologize for his behavior” doesn’t make the apology. In this case, it is an expression of opinion.

**Pragmatic Rules**

Pragmatic rules govern a number of conversational interactions: sequential organization and coherence of conversations, repair of errors, role, and intentions. Organization and coherence of conversations include taking turns; opening, maintaining, and closing a conversation; establishing and maintaining a topic; and making relevant contributions to the conversation.

Repair includes giving and receiving feedback and correcting conversational errors. The listener attempts to keep the speaker informed of the status of the communication. If the listener doesn’t understand or is confused, he or she might assume a quizzical expression or say, “Huh?”
Role skills include establishing and maintaining a role and switching linguistic codes for each role. In some conversations you are dominant, as with a small child, and in others you are not, as with your parents, and you adjust your language accordingly.

Roles in a conversation influence the choice of vocabulary and language form. For example, you might be very formal in your role as student presenter at a professional conference but very informal in the role of copresenter with the other students when you celebrate your success later. In another example, your role as grandchild requires different language features than your role as a young parent, lover, or roommate.

Intentions are what a speaker hopes to accomplish by speaking. When I say, “How do you spell ‘conqueror’?” my goal is to acquire information. When you respond, “Look it up online,” your intention is to deflect having to answer because you don’t know either. Speakers have a wide variety of intentions or ways to use their language.

Conversation is governed by the “cooperation principle” (Grice, 1975): Conversational participants cooperate with each other. The four maxims of the cooperation principle relate to quantity, quality, relation, and manner. Quantity is the informativeness of each participant’s contribution: No participant should provide too little or too much information. In addition, the quality of each contribution should be governed by truthfulness and based on sufficient evidence. The maxim of relation states that a contribution should be relevant to the topic of conversation. Finally, each participant should be reasonably direct in manner and avoid vagueness, ambiguity, and wordiness.

Three general categories of pragmatic rules concern

1. Selection of the appropriate linguistic form
2. Use of language forms consistent with assumed rules
3. Use of ritualized forms

Selection of form between “Gimme a cookie” and “May I have one, please” is influenced by contextual variables and the speaker’s intention. One choice may work with a school friend, whereas the other works best with the teacher. Listener characteristics that influence speaker behaviors are gender, age, race, style, dialect, social status, and role.

Speech may be direct or indirect as reflected in the syntactic form. “Answer the phone” is a direct order or request to perform that act. In contrast, an indirect syntactic form such as “Could you answer the phone?” is a more polite way of requesting. As a mature language user, you know that the expected outcome is for you to answer the phone, not to answer the question with a “yes.”

Speech may also be literal, nonliteral, or both. In literal speech, the speaker means what she or he says. After a 10-mile hike, you might exclaim, “My feet really hurt,” and no doubt they do. In contrast, nonliteral speech does not mean what the speaker has said. Upon discovering that transportation home has not arrived, the same tired hiker might state sarcastically, “Just what I need, more walking.” Both literal and nonliteral meanings might be heard in the comment of a mother as she enters her child’s messy room: “Mommy really likes it when kids pick up their room.” She does like it, but she’s also being sarcastic.

The wheels of social interaction are greased by ritualized sequences, such as “Hi, how are you?” and “Wha’s up?” These predictable forms ease social interactions and individual participation. We can all recall an occasion when we felt close to death and yet responded, “I’m fine! How are you?”—a response that has become ritualized in casual greetings.

RELATIONSHIP OF LANGUAGE COMPONENTS

The language components we just discussed may be artificial, merely an analytical device for linguists to use in discussing language. For example, some linguists emphasize the intimate relationship between semantics and syntax rather than the structural
These linguists, called emergentists, stress the similarity and causal relationship between meanings and syntax, suggesting that grammar grows out of semantics.

That said, the components of language do provide a convenient framework for us to discuss language development. It may be helpful to think of the relationship between language components as presented in Figure 1.7, in which pragmatics is the organizing principle of language. In other words, language is heavily influenced by context. Context, both situational and linguistic, determines the language user’s communication options.

Bilingual children who learn both home languages simultaneously are able to become proficient in both languages by preschool age but then may shift dominance, sometimes losing the ability to be bilingual by the teen or adult years.
We might also add that a need to communicate exists prior to the selection of content and form. It is only when the child desires a cookie and is in an appropriate context to receive one that he or she employs the rules of syntax, morphology, phonology, and semantics in order to form the request “Can I have a cookie, please?”

Obviously, all the components of language are linked in some way. For example, the syntactic structure (“Yesterday I . . .”) may require the morphological marker for past tense (-ed), which, in turn, changes phonetically (/t/) to accommodate the affected word (walk). In development, components may also influence one another in that changes in one may modify development in another.

### Dialects

The United States is becoming an increasingly pluralistic society in which cultural and ethno-racial groups contribute to the whole but retain their essential character. One characteristic of these groups may be linguistic and/or dialectal. Most groups continue to embrace their culture and, when non-English, their language.

### A Changing Demographic

It is conservatively projected that the population of people of color will increase in the United States to 63 million by 2030. At the same time, the white, non-Latino population will increase at a slower rate and will thus become a smaller segment of the entire U.S. population. If current trends continue, white non-Latinos will be the largest minority by the year 2050.

At present, in the United States approximately one in four Americans identifies as other than white non-Hispanic. In the states of California, New Mexico, Hawaii, and Texas and in a score of cities and several counties, people of color represent more than 50% of the population. This situation reflects traditional demographics and a population shift that is the result of recent immigration, internal migration, and natural increase.

Within the last twenty years, 80% of the legal immigrants to the United States have come from Asia and Latin America. Approximately 40% of all recent legal immigrants are Asian. As a result, there are over 12.5 million Asians and Asian Americans residing in the United States. Although this number represents only about 4% of the total U.S. population, it does not indicate the impact of Asians and Asian Americans on the country. Asians and Asian Americans tend to settle in coastal states, especially in the West, where they form large segments of the population. In addition, Asians and Asian Americans represent the fastest-growing segment of the U.S. population. Approximately three fourths of the legal Asian immigrants come from the five countries of Vietnam, the Philippines, Korea, China, and India. These individuals speak several languages and dialects of those languages.

There are approximately 52 million Latinos in the United States. These include recent immigrants as well as U.S. citizens with Spanish surnames who identify with Latino culture to a lesser degree. Approximately 40% of all recent legal immigrants are Latino. These immigrants come primarily from Mexico and Central America, Cuba, and South America and speak various dialects of Spanish. Many U.S. citizens from Puerto Rico also move to the United States. Most of the recent increase in the numbers of Latinos is due to increased births not immigration.

In addition, there are approximately 80,000 legal black immigrants per year from the Caribbean, South and Central America, and Africa. This group represents slightly less than 1% of the U.S. population. This minority represents a number of languages, as is evident from the many geographic areas of origin.

The exact number of illegal immigrants is unknown. Estimates range from 5 to 15 million.
The largest internal migration is and has been that of African Americans who number 35 million, or 12% of the U.S. population. Reversing the trend of the early to mid-twentieth century, African Americans began returning to the South in the early 1970s. Many of these individuals speak regional and/or ethno-racial dialects, such as African American English.

To a smaller extent, Native Americans, totaling 2 million or 0.7% of the U.S. population, have also experienced internal migration. At present, just over 20% of Native Americans live in reservations and Off-Reservation Trust Lands, compared to 90% in 1940. Their speech may reflect their native language or the specific dialect of American English they learned.

Currently, the 1.2 million Native Americans who are affiliated with some native community are divided among approximately 450 nations varying in size from the Cherokee Nation of over 300,000 to groups of just a few individuals. In addition to representing a variety of cultures, Native Americans speak over 200 different languages. Some 78% of Native Americans live in urban areas, leading those in the majority culture to perceive them as of little consequence.

Birthrates differ across groups and also contribute to the changing demographics of the U.S. population. The majority white birthrate is 1.4, inadequate to maintain the relative proportion of whites in the United States. Birthrates for other populations are higher, for example, 1.7 for African Americans, 2.4 for Hispanic Americans, and 1.7 for Asian Americans (National Center for Health Statistics, 2004).

A language is especially changeable “around the edges,” where its speakers interact with speakers of other languages. For example, in many bilingual communities, speakers develop new varieties of communication incorporating both languages, and these varieties function as the basic vernacular, or everyday speech, of the community.

DIALECTAL DIFFERENCES

A child born and raised in Boston will not sound like a child from Charleston, South Carolina. In turn, a poor child and a wealthy preparatory school child from Charleston will not speak in the same way. These differences are called dialectal differences. In general, the language of these children and their families reflects the environmental influences of the language spoken around them. No child learns dialect-free English.

We cannot adequately discuss American English without considering dialectal variations, such as African American English and what we shall call Latino English and Asian English, and their effect on the learning of American English and on the learner. To some extent languages are theoretical entities. The view of a monolithic, unchanging, immutable language does not fit reality. As mentioned, languages are fluid and changing.

Not all speakers of a language use the same language rules. Variations that characterize the language of a particular group are collectively called a dialect. Each of us is a dialectal speaker. A dialect is a language-rule system used by an identifiable group of people that varies in some way from an ideal language standard. Dialects usually differ in the frequency of use of certain structures rather than in the presence or absence of these structures. The ideal standard is rarely used except in formal writing, and the concept of a standard spoken language is practically a myth. Because each dialect shares a common set of grammatical rules with the standard language, dialects of a language are theoretically mutually intelligible to all speakers of that language.

No dialect is better than any other, nor should a dialect be considered a deviant or inferior form of a language. To devalue a dialect or to presume that one dialect is better ultimately devalues individuals and cultures. Each dialect is a system of rules that should be viewed within its social context. A dialect is adequate to meet the demands of the speech community in which it is found. Thus, it’s appropriate for its users. Like languages, dialects evolve over time to meet the needs of the communities in which they are used.
Despite the validity of all dialects, society places relative values on each one. The standard, mainstream, or a majority dialect becomes the “official” criterion. Mainstream speakers of the language determine what is acceptable, often assuming that their own dialect is the most appropriate. In a stratified society, such as that of the United States, some dialects are accorded higher status than others. But, in fact, the relative value of a dialect is not intrinsic; it represents only the listener’s bias. Dialects are merely differences within a language.

The two ways of classifying dialects—the deficit approach and the sociolinguistic approach—are illustrated in Figure 1.8. In the diagram, dialects that are closer to the standard in the frequency of rule use are separated by less distance. Under the deficit approach, each dialect has a different relative status. Those closer to the idealized standard are considered to be better. Status is determined relative to the standard. The sociolinguistic approach views each dialect as an equally valid rule system. Each dialect is related to the others and to the ideal standard. No value is placed on a dialect. Dialectal variations that might be considered to represent Nonmainstream American English (NMAE) include Southern American English, Creole English, Latino English, and African American English. Designation as NMAE represents degree of difference, not qualitative judgments of better or worse.

RELATED FACTORS

Several factors are related to dialectal differences. These include geography, socioeconomic status, race and ethnicity, situation or context, peer-group influences, and first- or second-language learning. The United States was established by settlers who spoke many different languages and several dialects of British English. Members of various ethnic groups chose to settle in specific geographic areas. Other individuals remained isolated by choice, by force, or by natural boundaries. In an age of less mobility, before there were national media, American English was free to evolve in several separate ways.

A New York City dialect is very different from an Ozark dialect, yet both are close enough to Standard American English (SAE) to be identified as variants of SAE. As children mature, they learn the dialect of their home region. Each region has words and grammatical structures that differ slightly. What are sack and pop to the Midwestern American are bag and soda to the Middle Atlantic speaker. The Italian sandwich changes to submarine, torpedo, hero, wedge, hoagie, and po’boy as it moves about the United States. Within each region there is no confusion. Order a milkshake in Massachusetts and that’s

**Figure 1.8 The Relationship of the Idealized Standard Language and Its Dialects**
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what you get—flavored milk that’s been shaken. If you want ice cream in it, you need to ask for a frappe.

Some regions of the United States seem to be more prone to word invention or to novel use than others. In the southern Appalachian region, for example, you might encounter the following:

A man might raise enough corn to bread his family over the winter.
To do something without considering the consequences is to do it unthoughtedly.
Something totally destroyed would be torn to flinderation.
Long-lasting things are lasty.

Note that the form of each word follows generally accepted morphological marking rules, such as the -ly in unthoughtedly.

As a child, my daughter was given a vivid example of regional dialectal differences while conversing with a child from the southern United States. Although she was white, the child’s older half brother was the product of a racially mixed marriage. Trying to figure out this situation, my daughter ventured the opinion, “Your brother is really tan.” She was corrected quickly with, “No he ain’t; he’s eleven.”

A second factor in dialectal differences is socioeconomic status (SES). This factor relates to social class, educational and occupational level, home environment, and family interactional styles, including maternal teaching and child-rearing patterns. In general, people from lower-SES groups use more restricted linguistic systems. Their word definitions often relate to one particular aspect of the underlying concept. Those with higher SES generally have more education and are more mobile, which generally contribute to the use of a dialect closer to the mainstream. For example, among African American children, boys from lower-income homes are more likely than middle-class African American boys or girls to use features of a dialect called African American English (AAE; Washington & Craig, 1998). Many lower-SES English speakers change the final “ing” /ŋ/ to /n/, producing workin’ for working.

Racial and ethnic differences are a third factor that contributes to dialect development. By choice or as a result of de facto segregation, racial and ethnic minorities can become isolated, and a particular dialectal variation may evolve. It has been argued that the distinctive Brooklyn dialect reflects the strong influence of Irish on American English. Yiddish influences have also affected the New York City dialect. The largest racial group in the United States with a characteristic dialect is African American. African American English is spoken by lower-SES African Americans, primarily in large industrial areas and in the rural South. Not all African Americans speak African American English.

Fourth, dialect is influenced by situational and contextual factors. All speakers alter their language in response to situational variables. These situationally influenced language variations are called registers. The selection of a register depends on the speaker’s perception of the situation and the participants, attitude toward or knowledge of the topic, and intention or purpose. A casual, informal, or intimate register is called a vernacular variation. Informal American English uses more contractions (isn’t, can’t) and particles (get up, put on) than formal American English. The variation from formal to informal styles or the reverse is called style shifting and is practiced by all speakers. Regardless of the SES of the speaker, style shifts seem to be in the same direction for similar situations. For example, in formal reading there is greater use of -ing (/ŋ/), while informal conversation is characterized by an increase in the use of -in (/n/). Most shifts are made unconsciously. Thus, we might read aloud “I am writing” but say in conversation “I’m writin’.”

A fifth influence on language is peer group. In the United States, groups such as teens or lesbians and gay men have their own lexicons and idioms that are not understood by the society as a whole. Peer influence is particularly important during adolescence as you know. Generally, the adolescent dialect is used only with peers. Linguists have labeled
two strains of the current teen dialect as “mallspeak” and “texting.” Minimalist and repetitive, the rather imprecise mallspeak is a spoken dialect that overuses words such as *like*, *y’know*, and *whatever*. In contrast, text messaging is minimalist “code” that you use on your smartphone. On chat lines and when instant messaging, communicators use a shorthand including letters for words, such as “u” for *you* and “r” for *are*; numbers for words, such as “4” for *for*; phonetic spelling, such as “sum” for *some*; and combinations, such as “sum1” for *someone* or “b4” for *before*. Whole phrases such as *by the way* may be reduced to “BTW.”

Finally, a dialect may reflect the primacy of another language. Speakers with a different native language often retain vestiges of that language. They typically code switch from one language to the other. The speaker’s age and education and the social situation influence the efficacy of code switching.

**AMERICAN ENGLISH DIALECTS**

Standard American English (SAE) is an idealized version of American English that occurs rarely in conversation. It is the form of American English that is used in textbooks and on network newscasts. All of us speak a dialect of English or another language. When making comparisons, it may be more appropriate to speak of Mainstream American English (MAE).

There are at least 10 regional dialects in the United States (presented in Figure 1.9): Eastern New England, New York City, Western Pennsylvania, Middle Atlantic, Appalachian, Southern, Central Midland, North Central, Southwest, and Northwest. In general, the variations are greatest on the East Coast and decrease to the West. Each geographic region has a dialect marked by distinct sound patterns, words and idioms, and syntactic and prosodic systems. Regional dialects are not monolithic. For example, within Southern American English, racial differences exist. This is further complicated by the use of Cajun/Creole American English in Louisiana (Oetting & Wimberly Garrity, 2006).

The major racial and ethnic dialects in the United States are African American English, Spanish-influenced or Latino English, and Asian English. In part, these dialects are influenced by geographic region and by socioeconomic factors. Spanish influences also differ depending on the country or area of origin. Colombian Spanish is very different from Puerto Rican Spanish. Asian English differs with the country of origin and the native language.

![Figure 1.9 Major American Geographic Dialects](image)
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African American English

For the purposes of description, we shall consider African American English (AAE) to be the relatively uniform dialect used by African Americans in the inner cities of most large urban areas and in the rural South, when speaking casually. In short, it is the linguistic system used by lower-SES African American people within their speech community. As such, AAE shares many of the characteristics of Southern and other lower-SES dialects. Obviously, not all African Americans speak the dialect. Even among speakers of AAE, a difference exists in the amount of dialectal features used by different individuals. Conversely, white speakers who live or work with speakers of AAE may use some of its features. It is also important to remember that there are variations of AAE that its speakers use for certain situations. As with other dialects, there is a formal–informal continuum. Individual differences may be related to age, geographic location, income, occupation, and education.

AAE is a systematic language-rule system, not a deviant or improper form of English. Its linguistic variations from Mainstream American English (MAE) are not errors. The linguistic differences between AAE and MAE are minimal. Most of the grammatical rules and underlying concepts are similar. Variations are the result of AAE’s different and equally complex rule system. Although it shares features with other dialects, AAE has some features—such as the use of be in the habitual sense, as in “She be working there since 1985,” and the triple negative, as in “Nobody don’t got none”—that are primarily characteristic of AAE. Much of the sense of this dialect can also be found in its intonational patterns, speaking rate, and distinctive lexicon.

The major characteristics of AAE are listed in Appendix B. It is unlikely that any given individual who speaks AAE will exhibit all of these characteristics. The frequency of appearance of each feature will change with situational variations and over time.

Latino English

Within the United States, the largest ethnic population is Hispanic. Not all people with Spanish surnames speak Spanish; some do exclusively; and still others are bilingual, speaking both Spanish and English. The form of English spoken depends on the amount and type of Spanish spoken and the location within the United States. The two largest Hispanic groups in the United States are of Puerto Rican–Caribbean and Mexican–Central American origin. Although both groups speak Spanish, their Spanish dialectal differences influence their comprehension and production of American English. The dialect of American English spoken in the surrounding community also has an effect. For ease of discussion, we will refer to these dialects collectively as Latino English (LE). Appendix B summarizes the major differences found between LE and MAE.

Asian English

Although we shall use the term Asian English (AE) throughout this text, no such entity actually exists. It is merely a term that enables us to discuss the various dialects of Asian Americans as a group.

The most widely used languages in Asia are Mandarin Chinese, Cantonese Chinese, Filipino, Japanese, Khmer, Korean, Laotian, and Vietnamese. Of these, Mandarin Chinese has had the most pervasive influence on the evolution of the others. Indian and colonial European cultures, as well as others, have also influenced these languages. Each language has various dialects and features that distinguish it from the others. Thus, in reality there is no Asian English as a cohesive unit.

Nonetheless, the English of Asian language speakers has certain characteristics in common. These are listed in Appendix B. The omission of final consonants, for example, is prevalent in AE. In contrast to English, most Asian languages, with the exception of Korean, have vowel-final syllables, called open syllables.
Conclusion

Language is a social tool consisting of a very complex system of symbols and rules for using those symbols. Native speakers of a language must be knowledgeable about the symbols employed and the acceptable usage rules, including concept, word, morpheme, and phoneme combinations.

Humans may be the only animals with a productive communication system that gives them the ability to represent reality symbolically without dependence on immediate contextual support. Although animals clearly communicate at some level, this communication is limited in topic and scope and usually is dependent on the context. For example, bees have an elaborate system of movements for conveying information, but it is extremely iconic (it looks like what it conveys) and unitopical (the topic is always where to find nectar). Whether higher mammals, such as chimpanzees and other primates, are capable of complex symbolic communication will be discussed in the next chapter. In any case, it is only after intensive, long-term training that these animals learn what the human infant acquires in a few short months with little or no training.

Dialectal differences can pose special problems for a language-learning child, especially when the child enters school. Yet children who speak with significantly different dialects of American English seem to understand MAE. These young children, if motivated, follow a developmental sequence and learn a second language or dialect relatively easily. They already have a language-rule system that enables them to understand other dialects and learn other languages. Although different from MAE, other dialectal systems are not deviant. The U.S. district court for eastern Michigan, in a ruling known as the Ann Arbor decision (Joiner, 1979), determined that AAE is a rule-governed linguistic system. Furthermore, educators must develop sensitive methods for teaching MAE to dialectal speakers so they have the same educational and employment opportunities.

Hopefully, this introductory chapter has given you an appreciation for the complexity of the topic we’ll be discussing. Imagine the enormous task you faced as a newborn with the entirety of language acquisition before you. In the following chapters, I’ll try to explain as clearly as I can how you did it. Along the way, you’ll gain the knowledge to become an observant parent, guiding teacher, or competent speech-language pathologist.

Discussion

Well, I did warn you! Yes, you’re right; this is complicated and it can be confusing. It’s good to reflect on what we’ve read at the end of each chapter and to ask ourselves, “So what?”

The highlights in the chapter are the distinctions among speech, language, and communication. Too many speech-language pathologists (SLPs) are still referred to as the “speech teacher” despite the fact that in school caseloads, the largest percentage of cases are now language impairments. If you told someone that you worked with language impairments, not speech, and he or she replied, “Aren’t they the same thing?” how would you respond? Think about it. You have the ammunition from this chapter.

Other important aspects of this chapter include the characteristics of language. It’s a social tool that’s rule based, and those rules enable it to be used in a generative fashion. Language can also be characterized by its five areas: syntax, morphology, phonology, semantics, and pragmatics. Of these, pragmatics seems to be the organizing area because context determines the other four. All areas are interdependent, and changes in one area, either because of development or the dynamics of language use, will result in changes in the others.

This last item—the interdependence of the five areas of language—has important implications for development and also for intervention. When an SLP intervenes with a child or an adult with a language impairment, there may be unforeseen consequences. For example, working on writing with an adult with aphasia or language loss, often due to stroke, may have a beneficial and unintended effect on spoken language. Likewise, adding too many new words to a child’s language lesson may increase phonological precision but slow the child’s delivery and decrease sentence length. The effect will vary with...
the amount of change, the individual child, and the type and severity of the impairment.

As we travel through this text, note the changes that occur and the overall effect on communication. Where appropriate I will characterize change based on the five areas of language.

I know, I know . . . you sound fine, but everyone else has an accent or a dialect! Not so fast. If nothing else, please take from this chapter that a standard American English really doesn’t exist in your daily use of language. You speak a dialect . . . only I use the standard.

I’m having fun with you.

We all speak a dialect, especially me. The important thing to recognize is that no one dialect is better than any other. They are all rule-based variations. And they’re all valid.

In the real world, however, some dialects are rewarded, while others are punished by the culture as a whole. Still, within a given community, a dialect that is punished by the larger society may be rewarded and may give status to its user. It is very difficult to separate a dialect or a language, for that matter, from its culture.

Main Points

- Speech is a motor act and a mode of communication, but not the only one.
- Language is the code used in communication. More specifically, it is a set of symbols and the rules for using them.
- Communication is the act of transferring information between two or more people. Speech and language are two of the tools used to communicate.
- Characteristics of language. Language is
  - A social tool
  - Rule governed
  - Generative
- Language has five parameters: syntax, morphology, phonology, semantics, and pragmatics.
- Pragmatics is considered by some sociolinguists to be the organizing principle of language that determines the other four aspects when communicating.
- We all speak a dialect of the language ideal.
  - A dialect is a language-rule system spoken by an identifiable group of people that varies from the ideal language standard.
  - The deficit approach to dialects assigns status based on the amount of variation from the standard. In contrast, the sociolinguistic approach recognizes all dialects as valid and related forms of a language with no relative status assigned.
  - Factors related to dialectal differences are geography, socioeconomic level, race and ethnicity, situation or context, peer-group influences, and first- or second-language learning. Examples include African American English, Latino English, and “Asian English.”
  - Dialectal considerations affect education, employment, and perceived status.

Reflections

1. Speech, language, and communication are different aspects of the same process. Can you contrast all three?
2. Not all of the message is carried by the linguistic code. How do the other aspects of communication contribute?
3. Language is a social tool that is rule governed and generative. Explain these three properties of language.
4. Language consists of five interrelated components. Describe these components, as well as the units of morpheme and phoneme.
5. How do dialects relate to each other and to the parent language?
6. What factors contribute to the development of dialects? Relate these to the dialects found in the United States.
Models of language development help us understand the developmental process by bringing order to our descriptions of this process and providing answers to the questions how and why. Of the many linguistic theories proposed, we will examine the two main theoretical positions. Each contains a core of relevant information and reflects divergent views of language and child development.

Our knowledge of child language development is only as good as the research data that we possess. In turn, these data reflect the questions that researchers ask and the studies they design to answer these questions. When you have completed this chapter, you should understand the following:

- Relationship of Generative or Nativist theories and Constructionist theories
- Effect of the method of data collection on the resultant data
- Effects of sample size and variability on the resultant data
- Issues of naturalness and representativeness
- Collection and analysis procedures
- Value of cross-language studies
- Important terms:
  - child-directed speech (CDS)
  - Emergentism
  - Generative approach
  - Constructionist approach
  - Nativist approach
If you’re like me, philosophical theories and arguments often result in a headache. I know it isn’t very academic of me, but my mind naturally wants to describe rather than theorize. Because I look for ways to unite rather than divide, trying to defend a notion that two theories are diametrically opposed has been always difficult. And here we are in the present chapter, trying to explain the development and use of language from a theoretical point of view.

Admittedly, linguistic theories have a place. They help explain the overall processes we’ll describe in this text. For researchers, theories provide an explanation and also a framework for investigating language development and use. It is through these investigations that we collect the linguistic data from which this text is created. In this chapter, I will try to explain the primary theoretical approaches to the study of language. We will then explore how language data are gathered and explored. I’ll try to do all this without inducing a headache on your part or mine.

Linguistic Theory

The study of language and language development has interested inquiring persons for thousands of years. Psammetichus I, an Egyptian pharaoh of the seventh century BCE who had a difficult-to-pronounce name, supposedly conducted a child language study to determine the “natural” language of humans. Two children were raised with sheep and heard no human speech. Needless to say, they did not begin to speak Egyptian or anything else that approximated human language. Throughout history, individuals as different as Saint Augustine and Charles Darwin published narratives on language development. Several modern researchers have devoted their professional careers to the study of language development and use.

People study language development for a variety of reasons. First, interest in language development represents part of a larger concern for human development. Scholars attempt to understand how development occurs. People who specialize in early childhood education are eager to learn about this developmental process in order to facilitate child behavior change. Special educators and speech-language pathologists study child language to increase their insight into normal and other-than-normal processes.

A second reason for studying language development is that it is interesting and can help us understand our own behavior. There is a slightly mystical quality to language. As mature language users, we cannot state all the rules we use; yet, as children, we deciphered and learned these rules within a few years. Few of us can fully explain our own language development; it just seemed to happen.

Finally, language-development studies can probe the relationship between language and thought. Language development parallels cognitive development. Hopefully, the study of language development may enable language users to understand the underlying mental processes to some degree.

Because language and language development are so complex, professionals are often at odds as to which approach provides the best description.

- The linguist is primarily concerned with describing language symbols and stating the rules these symbols follow to form language structures.
- The psycholinguist is interested in the psychological processes and constructs underlying language. The psychological mechanisms that let language users produce and comprehend language are of particular concern.
- The sociolinguist studies language rules and use as a function of role, socioeconomic level, and linguistic or cultural context. Dialectal differences and social-communicative interaction are important.
As with any field of inquiry, there are major theoretical differences. In this video, Dr. Barbara Lust of Cornell University outlines the major theoretical approaches in minutes 6:35–8:52.

http://www.youtube.com/watch?v=z9gATksP8xc

The behavioral psychologist minimizes language form and emphasizes the behavioral context of language, such as how certain responses are elicited and how the number of these responses is increased or decreased.

The speech-language pathologist concentrates on disordered communication including the causes of disorder, the evaluation of the extent of the disorder, and the remediation process.

The study of how children learn language is like many other academic pursuits in that different theories which attempt to explain the phenomenon compete for acceptance. Occasionally one theory predominates, but generally portions of each are used to explain different aspects. Part of the problem in designing an overall theory is the complexity of both language and communication behavior.

NATURE VERSUS NURTURE

If you’ve had an introductory course in psychology or development, you have no doubt been introduced to the nature versus nurture debate. In its simplest terms, the discussion centers on whether some aspect of development occurs because

- it is a natural and inherent part of being human, or
- it occurs because of nurturance and learning from the environment.

In other words, is our destiny in our genes, in some aspect of being human, or do environment and learning mediate our biological inheritance?

This debate is alive and well in linguistics (Galasso, 2003). The way in which children acquire linguistic knowledge has been the focus of intense interest and debate in cognitive science for well over half a century. There are two primary approaches, representing nature and nurture, respectively:

1. Generative, or Nativist
2. Interactionist, which is characterized chiefly by Constructionism and Emergentism

Within this chapter we’ll explore these approaches, examining their overall theories, limitations, and contributions. I’ve tried to give you the main points of each theory and to highlight the grains of truth in each. Look for similarities and contrasts. You might find it helpful to read each theory separately and allow time for processing before going on to the next.

GENERATIVE APPROACH

The Generative approach, or Nativist approach, assumes that children are able to acquire language because they are born with innate rules or principles related to the structures of human languages (Chomsky, 1965a, 1965b; de Villiers, 2001; Lenneberg, 1967; Wexler, 1998, 2003; Yang, 2002). Generativists assume that it is impossible for children to learn linguistic knowledge from the environment given that the input children hear is limited and full of errors and incomplete information (Chomsky, 1965a, 1965b). Even with these limitations, children are still able to acquire linguistic knowledge quickly because of the guidance of innate linguistic hypotheses. Something innate or inborn guides a child’s learning. According to Chomsky, “To come to know a human language would be an extraordinary intellectual achievement for a creature not specifically designed to accomplish this task” (1975, p. 4).
Basic Theory

Beginning in the late 1950s, Noam Chomsky and others, working from the assumption that language is a universal human trait, tried to identify syntactic rules that applied to all human languages. These rules were assumed to be present in each human at birth in a location of the brain theoretically called the language acquisition device, or LAD. Nativists then attempted to describe the syntactic rules that enabled adult language users to generate a seemingly endless number of sentences in their specific language.

It seemed only natural to apply the new adult linguistic models to child language acquisition. Known by various names, the resulting models basically assumed that children used the universal language rules found in their LADs to figure out the rules of the language to which they were exposed. In 1973, Roger Brown—we’ll meet him later—reviewed and evaluated these models, concluding that none of them was totally satisfactory in explaining children’s development of language. The basic problem was that the early Generativist theories were adult-based and there was no evidence that children used, or even needed, the adultlike linguistic categories and rules to acquire language. Many linguists concluded after looking at languages across different cultures that no single formal grammar was adequate to account for the acquisition process in all of the world’s many languages (Slobin, 1973).

Several theorists suggested that, instead of syntax, a semantic-cognitive basis existed for children’s early language (Bloom, 1973; Brown, 1973; Schlesinger, 1971; Slobin, 1970). Called the Semantic Revolution, the position held that the semantic-syntactic relations apparent in children’s early language correspond rather closely to some of the categories of infant and toddler sensorimotor cognition. Instead of the subjects and verbs used by adults to produce sentences, children used meaning units, such as agents, which caused action (mommy, daddy); actions (eat, throw); and objects, which received it (cookie, ball). These linguistic units that children know nonlinguistically might form the basis for a linguistic unit such as agent-action-object (Mommy eat cookie; Daddy throw ball). Other combinations included possessor-possessed (Mommy sock) and object-location (Key table). Although these rules explained some child utterances, they failed to explain others. In addition, it was difficult to explain how children moved from these semantic-based rules to the more abstract syntactic rules of adults.

As a consequence, a group of theorists began to advocate a return to adult syntactic models (Baker & McCarthy, 1981; Hornstein & Lightfoot, 1981; Pinker, 1984). These linguists argued that the discontinuity of semantic and syntactic models of language learning posed genuine problems of explanation. They argued instead for a continuity assumption in which children operated with the same basic linguistic categories and rules as adults (Pinker, 1984). At this point, these theorists had returned to a linguistic nativism, which assumed that throughout our lives, all human beings possess the same basic linguistic competence, in the form of universal grammar (Chomsky, 1980).

Language Learning

Generative grammar assumes that natural languages are like formal languages, such as mathematics. As such, natural languages are characterized by two things:

1. A unified set of abstract algebraic rules that are meaningless themselves and insensitive to the meanings of the elements (words) they combine
2. A set of meaningful linguistic elements (words) that serve as variables in the rules (Tomasello, 2006)

To learn a language, each child begins with his or her innate universal grammar to abstract the structure of that language. Think of the universal grammar as a set of mental modules largely dedicated to language.
Acquisition has two components:

1. Acquiring all the words, idioms, and constructions of that language
2. Linking the core structures of the particular language being learned to the universal grammar

Although the language a child hears contains errors, the child acquires the rules because he or she has a genetically determined capacity for acquiring language. The universal grammar contains a limited set of possibilities for how language fits together. These narrow possibilities help the child interpret the language input correctly and will later provide the model for the child’s own language output (Pinker & Ullman, 2002).

Being innate, universal grammar does not develop but is the same throughout a person’s life span. In other words, there is a continuity in language acquisition and use. The assumption, therefore, is that when a child says, “I’m eating a cookie,” she has an adultlike understanding of the present progressive (be + verb-ing) form and can generate similar forms. Knowing the rules enables the child to generate novel sentences.

Theoretical Weakness

One problem for generative grammar involves fixed and semi-fixed structures that are not based on abstract grammatical categories but on particular words or fixed expressions, such as How’s it going? A large portion of human linguistic competence involves the mastery of these routine expressions, plus idioms. Those learning English as a second language will experience difficulty with expressions in which the meanings are nonliteral, such as He’s starting to get to me and Hang in there. These expressions are not part of a core grammar that can generate grammatical rules. Instead, they seem to be memorized like words.

Constructionists would see these language structures as examples that structure emerges from use. Subsequently, a language community may conventionalize or adopt these linguistic structures from their language use.

INTERACTIONALIST APPROACH

In contrast to the Generative approach is the Interactionalist approach that emphasizes the combination of biological and environmental influences. Children learn linguistic knowledge from the environmental input to which they are exposed (Christiansen & Charter, 1999; Goldberg, 2006; MacWhinney, 2004; Reali & Christiansen, 2005; Tomasello, 2005). According to this theoretical approach, children figure out the linguistic structures of the input language based on sufficient information from that language (Tomasello, 2000, 2003). Although there are variants, the two main Interactionalist approaches are Constructivism and Emergentism.

As with Nativists, Constructionists are interested in language structure, but there is less theoretical commitment to language form and to ages of acquisition. To learn language, children rely on the general cognitive mechanisms they possess (Abbot-Smith & Tomasello, 2006; Elman et al., 1996; Gomez, 2002; Tomasello, 2003). Note that this process is not accomplished by a specific language mechanism or LAD but by general brain processes. Although a child may not be born with a bias for grammatical patterns as in a universal grammar, the brain is organized and functions in a way that results in an ability to learn language associations. We are always in danger of overstatement when we simplify, but we could say that Nativists assume we have a brain designed for learning and processing language, while Interactionalists assume we can learn and use language because we have a large, complicated brain.
In addition, Interactionists consider the child to be a contributing member in the learning process. The child and the language environment form a dynamic relationship. A child cues parents to provide the appropriate language that the child needs for language acquisition. A parent’s adapted way of speaking to a child is termed **child-directed speech (CDS)** and varies in many ways from adult speech to other adults.

According to **Emergentism**, language is a structure arising from existing interacting patterns in the human brain. Although there is something innate in the human brain that makes language possible, that “something” did not necessarily evolve for language and language alone. For example, our brains seem naturally to seek patterns in incoming information. Children find patterns in the language input they receive. In other words, language is most likely what we do with a brain that evolved to serve many varied and complex challenges. A child’s language emerges not from stipulated rules found in the LAD but from the interaction of general cognitive mechanisms and the environment. The learning mechanisms found elsewhere in cognition are sufficient to bring about the emergence of complex language (MacWhinney, 2002; Sabbagh & Gelman, 2000). Although we are the only species capable of a fully grammatical language, we seem to have acquired language over time with a wide range of cognitive, perceptual, and social tools, none of which may have evolved for language alone.

**A Little Background**

One of the first theorists to propose how language learning occurs was B. F. Skinner, a well-known behaviorist. In 1957, Skinner wrote *Verbal Behavior*, in which he assumed that learning language was similar to learning any behavior. In brief, he theorized that parents model language, young children imitate these models, and parents reinforce children for these imitations. The Nativist Chomsky countered that

- parents provide poor models when talking to each other,
- children could not possibly learn all possible constructions by imitation, and
- parents do not reinforce the grammatically correct constructions of young children.

Instead, according to Chomsky, children learn language rules by deciphering them from the utterances they hear. In order to do that, of course, children rely on innate structures found in the LAD.

Later, sociolinguists countered that language acquisition follows a transactional model of child–caregiver give-and-take in which the child learns to understand the rules of dialogue, not of syntax or semantics. A communication base is established first, and language develops on this base to express verbally those intentions that the child previously expressed nonverbally. Social interactions and social relationships provide the needed framework that enables a child to decode and encode language form and content. Gradually, a child refines communication skills through repeated interactions. Contrary to the assertions of Chomsky, sociolinguists saw parent input to children to be highly selective. In turn, children selectively imitate those structures they are in the process of learning. Parents respond in conversational ways that serve to reinforce a child’s verbalization.

**Constructionism and Development**

The **Constructionist approach** is a usage-based approach that sees language as composed of constructions or symbol units that combine the form and meaning of language through the use of morphemes, words, idioms, and sentence frames. A central tenet is that language structure emerges from language use. The functions of language as a social
tool are central to development. Language structures are irrelevant without a purpose. Rather than assume that a child has an adultlike understanding when he or she uses a grammatical structure, the usage-based approach suggests that young children inconsistently use grammatical structures precisely because they have not developed adultlike abstract representations.

After hearing a large number of constructions with similar forms, a child starts to see regularities in the input and begins to use some word-specific constructions. For example, a child may use Mommy’s verb-ing only with specific words filling the verb slot. Thus, the child is a pattern finder. The child’s production is based on specific uses heard in the speech of others. Likewise, a child might not use It or She in place of Mommy because the child has not learned that a pronoun may be used in that spot. In other words, the child does not have abstract grammatical categories such as pronouns as substitutes for nouns. Later, using fixed constructions with open slots, such as Mommy’s verb-ing, a child learns to “fill in the blank,” first with specific constructions, such as Mommy’s eating (Pine, Conti-Ramsden, Joseph, Liebergott, & Serratrice, 2008; Theakston, Lieven, Pine, & Rowland, 2005; Wilson, 2003). At some point, a child discovers the relation between different word sequences and develops a more abstract way to represent these constructions.

From a variety of word-specific constructions, a child will figure out that there are more abstract ways of representing various constructions and acquire a more abstract rule. Even here correct production may be influenced by the frequency with which the child hears a particular grammatical construction (Bybee, 1995, 2002; Dabrowska, 2000; Dabrowska & Lieven, 2005). Remember that a variety of auxiliary or helping verbs (am, is, are, was, were) can fill the position between the noun and verb in the Noun be verb-ing construction.

As opposed to linguistic rules conceived by Generativists/Nativists as abstract algebraic procedures for combining words and morphemes, Constructionist linguistic rules are thought of as meaningful linguistic symbols (Tommasello, 2006). In other words, these patterns are meaningful units for communication, not just rules. For example, Noun be verb-ing is used to communicate about an action occurring currently. That is its meaning.
Because it is assumed that no universal grammar exists, usage-based theories do not have to explain the connection of such a grammar to language learning. Instead, children figure out their language from the regular and rule-based constructions of that language. As with all learning, they construct abstract categories and schemes from the concrete things they have learned. Children construct these abstractions gradually and in piecemeal fashion through two general cognitive processes:

1. Intention-reading, by which they attempt to understand the communicative significance of an utterance
2. Pattern-finding, by which they create the more abstract dimensions (Tomasello, 2006)

Linguistic input is crucial to this process.

Initially, children collect concrete pieces of language of many different shapes and sizes. Across these examples they generalize rules to create more abstract linguistic constructions in their mind. These, in turn, underlie their ability to generate creative new utterances.

At the center of Constructionist theory is the grammatical construction, consisting of a unit of language composed of multiple linguistic elements used together for a relatively coherent communicative function. Constructions vary in complexity, depending on the number of elements involved and their interrelations and in their abstractness.

**Theoretical Weakness**

Although an Interactionalist approach may have some appeal to those of us who spend our professional lives teaching language to children with language impairment, the theory doesn’t fully explain language development. For example, if typical language learning is based on the individual input each child receives, how do we account for the similarities of language learning and use across children? The Nativist notion of underlying language rules would more easily account for such similarity.

*Different theories have postulated how children learn language.*
CONCLUSION

It would appear that each theory may have a kernel of “truth.” Although we’ve only exposed the surface of these two theoretical approaches, you may be having some difficulty keeping the highlights of each separate. Table 2.1 presents the major elements of each theory.

**Table 2.1 Comparison of Nativist and Constructionist Theories**

<table>
<thead>
<tr>
<th></th>
<th>Nativist</th>
<th>Constructionist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major focus</td>
<td>Language structure.</td>
<td>Language use.</td>
</tr>
<tr>
<td>Cognitive</td>
<td>Specific neural structures dedicated to language enable humans to learn,</td>
<td>Language form and use result from complex human brains and the need to</td>
</tr>
<tr>
<td>contribution</td>
<td>process, and use language.</td>
<td>transmit messages in social interactions.</td>
</tr>
<tr>
<td>Language</td>
<td>Child learns language structure by learning specific language rules.</td>
<td>Child uses the form that best accomplishes his or her social goals.</td>
</tr>
<tr>
<td>learning</td>
<td></td>
<td>Through repeated use, child deduces rules.</td>
</tr>
<tr>
<td>Origins of</td>
<td>Language is innate and thus universal language rules exist across languages.</td>
<td>Language universals do not exist. Instead, language evolved to meet social needs.</td>
</tr>
<tr>
<td>language</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Role of</td>
<td>Child uses language input to deduce rules of the language.</td>
<td>Child and context have a dynamic relationship in which the child’s behavior influences child-directed speech tailored to the level required by the child to participate in social interactions.</td>
</tr>
<tr>
<td>environment</td>
<td></td>
<td></td>
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</tbody>
</table>

CONCLUSION

It would appear that each theory may have a kernel of “truth.” Although we’ve only exposed the surface of these two theoretical approaches, you may be having some difficulty keeping the highlights of each separate. Table 2.1 presents the major elements of each theory.

**Language Research and Analysis**

Throughout this text, we will be discussing child language development based on information gathered from studies of child language. These data are difficult to collect and often require extraordinary procedures in order to ensure valid, reliable, and objective reporting.

The basic goals of child language research are threefold:

1. Discover and confirm general linguistic principles and patterns of language development.
2. Clarify the relationship of language development to changes in other areas, such as cognition.
3. Provide a theoretical description of language development that helps explain the process.

The purpose of a child language study and the researcher’s theoretical predisposition will influence the type of data-collection procedure used. Theories can influence the
CHAPTER 2  ■  Describing Language

questions asked, the specific language features studied, and the overall design of a study. Because it is difficult for any of us to explain our own learning process, researchers form hypotheses about language learning and test these hypotheses against actual child language data. There is always the possibility that research may be based on a theoretical approach that does not reflect the actual language hypotheses children employ when attempting to learn and use language. Thus, the research runs the risk of not describing a child’s actual operating principles, hypotheses, or linguistic performance. For this and other reasons, child language research must be carefully designed and carried out.

There are many considerations that influence the data gathered through research. Let’s briefly explore issues related to child language study, such as the method of study, the population and language sample size and variability, the naturalness and representativeness of the language sample, data collection, and data analysis. Crosslinguistic studies and data will also be discussed.

Issues in the Study of Child Language

While the notion of collecting and analyzing child language data may seem simple, in fact it is quite complex. Several decisions must be made prior to data collection. The methods and procedures used can influence the resultant data and may unintentionally color the conclusions drawn from these data.

METHOD OF DATA COLLECTION

To a great extent the method of collection is driven by the aspect of language being studied. Let’s explore this briefly. Three general areas of interest might include speech perception, language comprehension, and language production.

In general, speech perception studies are interested in the speech discrimination of children, especially infants, and the ways in which these abilities may aid language learning. Recent advances in technology, especially digital recording and computers, have assisted researchers in isolating, reproducing, and combining sounds for research (Gerken & Asline, 2005; Karmiloff & Karmiloff-Smith, 2001). Infants can even be tested while still in the womb for their responses to speech sounds in isolation and in connected speech. Infant responses may consist of changing state, moving, or kicking. With older children and adults, speech perception is often assessed with more specific responses, such as pointing. One new approach is called online or real-time research in which responses are paired with brain-imaging techniques, such as magnetic resonance imaging (MRI), to identify areas of the brain where perception occurs. These techniques are also used in language comprehension and expression research.

Language comprehension studies are interested in our understanding of language. Subjects usually respond to structured procedures by looking, pointing, acting out, or following directions in response to a spoken or written stimulus. Of necessity, this type of research requires a standardized, structured experimental design to ensure that all subjects have the same input. As mentioned, these studies may also include neural imaging. For example, a researcher conducting a study of comprehension of sentences might be interested in the contributions of different types of memory that are stored in different areas of the brain.

Expressive language studies can take a number of forms. The primary difference is the degree of control the experimenter has over the context. We’ll be primarily discussing expressive language studies in the following sections.

Expressive language-development data are usually collected in two ways:

In this BBC video in Language Acquisition, we discuss the rationale for studying language acquisition. Specifically, minutes 2:17–7:03 look at the work of cognitive scientist Deb Roy of the Massachusetts Institute of Technology. http://www.youtube.com/watch?v=PZatzrVND0E
1. Spontaneous conversational sampling or natural observation
2. Structured testing or experimental manipulation

Each method raises issues of appropriateness for the language feature being studied. Either one alone may be insufficient to describe a child’s linguistic competence, that is, what he or she knows about language. Data yielded in one context may not appear in another. For example, in a study of pronouns in which I participated, children produced a wider variety in conversation and produced more advanced forms in more formal testing. Other researchers have also found that formal elicitation tasks, such as testing procedures, produce more advanced child language than conversational sampling. Ideally, the linguist would employ both informal and formal or structured approaches, using the structured procedures to obtain more in-depth information on the data collected by the more broad-based naturalistic or informal procedures.

Structured Collection Methods
Some researchers prefer testing or experimental manipulation in order to control for some of the variables inherent in more naturalistic collection. Within a test or experimental procedure, various linguistic elements may be elicited using verbal and nonverbal stimuli in a structured presentation. Such control of the context, however, may result in rather narrow sampling.

Formal procedures enable researchers to gather data that may not be readily available using conversational or observational techniques. For example, it is difficult to assess either children’s comprehension or their metalinguistic skills without direct testing. Some hypotheses cannot be tested directly, however, so researchers must test indirectly or observe some features of language development.

Language and experimental factors must be manipulated with caution. One aspect of language can affect others, even though the researcher does not intend for this to happen. For example, among both children and adults, new information is introduced into a conversation in a consistently more phonologically accurate manner than older, shared information. Thus, pragmatics influences phonology.

Likewise, experimental factors can have unintended consequences. For example, a researcher may highlight an item in a picture in an attempt to ensure a child’s accurate comment. Unfortunately, although the accuracy of the message does not seem to increase when one item is marked, the amount of redundancy or inclusion of irrelevant information does increase (Lloyd & Banham, 1997).

In addition, testing and experimental tasks do not necessarily reflect a child’s performance in everyday use. For example, in an experimental task, a child may rely on different problem-solving techniques than in everyday tasks.

Results can be misread. For example, noncompliance with testing or experimental procedures doesn’t necessarily mean noncomprehension or lack of knowledge. Especially with preschoolers, incorrect responding may indicate a lack of attention or interest.

The results of testing can be especially suspect unless they are analyzed thoroughly. Test scores alone tell researchers nothing about performance on individual items. Two children may have the same score and very different responses. Scoring of individual items may be limited to a wrong-or-right dichotomy, with little analysis of the types of incorrect responses and the underlying processes that these answers may reflect. Testing contexts may provide more or fewer stimuli than are found in the real world, thus modifying the difficulty of the task for the child.

Language processing is not a single unitary operation, as is often assumed in test construction, but consists of component operations, such as lexical or vocabulary access, syntactic decoding, and discourse processing, that are engaged at different times and with
varying degrees depending on the linguistic task. So-called offline test tasks, such as fill-ins or providing a missing word, measure only the end points of several linguistic processes.

During offline testing, components of the overall process may be overlooked. For example, the process of guessing a missing word may be the reverse of what happens in conversation. Conscious guessing is too slow in conversation. Rather than context aiding in predicting the next word or phrase of the speaker, contextual information seems to provide a check that correct items have been uttered. Although such offline language collection techniques may tell us what children know, they may also tell us little about how children process or access language.

In contrast, online tasks attempt to measure operations at various points during processing and describe individual and integrative components (Shapiro, Swinney, & Borsky, 1998). For example, at what point in the cue “Mary has a blue dress and a red dress; she has two _______” does the child access the word dresses? We might be able to determine this information by the online technique of asking a child to paraphrase or answer yes/no questions after only limited information is presented. For example, if we say, “Mary has a blue dress and a red dress,” a child may access dresses based on and or red or dress. Online techniques reflect an interest in discovering at which point this occurred. Techniques can be much more elaborate than this simple example suggests. Although still in their infancy, online techniques are beginning to provide valuable linguistic-processing data (Maas & Nailend, 2012).

In short, testing and experimental data may be very accurate but very limited. The results must be examined within the context of the specific tasks designed to elicit certain behaviors. A better measure is the consistency of use of a language feature across various tasks.

**Sampling and Observation**

Jerome Bruner, renowned child development specialist, began his career studying language in controlled situations, analyzing discrete bits of language. The model was confining, and the language data felt artificial to him. He then began studying children at home, videotaping open-ended interactions with their families. As a result, his later data had a more authentic quality to it. Naturalistic studies, such as language samples, may yield very different data than experimental manipulations (Abu-Akel, Bailey, & Thum, 2004; Wilson, 2003).

Sampling spontaneous conversation is more naturalistic and, ideally, ensures analysis of real-life behaviors. Such collection is not without its problems. For example, the data collected may be affected by several variables, such as the amount of language, the intelligibility of a child, and the effect of the context. To date, linguists have not identified all the possible variables that can affect performance or the extent of their influence. As a result, certain linguistic elements may not be exhibited even when they are present in a child’s repertoire. Some linguistic elements occur infrequently, such as passive-voice sentences, and others are optional, such as the use of pronouns. Usually, a single conversational sample is inadequate to demonstrate the full range of a child’s communication abilities. It is difficult to estimate a child’s competence or ability based on informal behavior. In addition, information on the child’s production provides only a general estimate of comprehension.

Sampling techniques exist along a continuum from unstructured, open-ended situations to more structured, restrictive ones in which the researcher attempts to control or manipulate one or more variables. For example, the researcher interested in narratives may want to elicit a particular variety, such as recounts, and directs a child to provide a story about something that happened to him or her. Pictures also might be used to elicit narratives. All such manipulations affect a child’s language. For example, pretend play involving routine events facilitates communication with more topic maintenance and less miscommunication among children than in less familiar interactive situations (Short-Meyerson & Abbeduto, 1997).
Child language data may also be obtained from the CHILDES system of database transcripts. The system includes programs for computer analysis, methods of linguistic coding, and systems for linking these transcripts to digitized audio and video. A corpus of language samples is available along with studies from English and other languages. The Internet address for CHILDES is given at the end of the chapter.

Any given naturalistic situation may be insufficient for eliciting a child’s systematic knowledge of language. Nor is there certainty that a given test situation will represent a child’s naturally occurring communication. Thus, it is best to have data from a combination of collection procedures. In either case, the linguist is sampling the child’s performance. The child’s linguistic competence—what he or she knows about language—must be inferred from this performance.

**SAMPLE SIZE AND VARIABILITY**

The researcher must be concerned about two samples: the sample or group of children from whom data are collected and the sample of language data from each child. In both samples, the researcher must be concerned with size and variability. Too small a sample will restrict the conclusions that can be drawn about all children, and too large a sample may be unwieldy. The two samples, subjects and language, also interact, one influencing the other.

**Size**

The number of children or subjects should be large enough to allow for individual differences and to enable group conclusions to be drawn. The overall design of the study will influence the number of subjects considered adequate. For example, it may be appropriate to follow a few children for a period of time, called a *longitudinal study*, but inappropriate to administer a one-time-only test to the same limited number of children (McGowan, McGowan, Denny, & Nittouer, 2013). Other considerations will also influence the number of children studied. In a longitudinal study, for example, as many as 30% of the children may be lost because of family mobility, illness, or unwillingness to continue over the length of the study, which may last several years. It might be better, in this case, to adopt an overlapping longitudinal design with two different age samples, each being observed for half the length of time that would have been needed in a longitudinal study. Unfortunately such studies have their own issues.

Wells (1985), for example, sampled 128 children for two years each, using such an overlapping longitudinal model. In contrast, Roger Brown (1973) studied three children intensively for 10 to 16 months. Wells recorded each child for analysis for 27 minutes at three-month intervals throughout the study, collecting an average of 120 utterances on each occasion. In contrast, Brown averaged two hours of sampling each month. More recently, Hart and Risley (1995) collected monthly audio samples of parents and children in their homes for two years.

**Variability**

The sample of children should accurately reflect the diversity of the larger population from which they were drawn. In other words, the children sampled should represent all socioeconomic, racial and ethnic, and dialectal variations found in the total population, and in the same proportions found there. Other variables that may be important include size of family, gender, birth order, presence of one or both parents in the home, presence of natural parents in the home, and amount of schooling. Some variables, such as socioeconomic status, may be difficult to determine, although parental education and employment seem to be important contributing factors. Mixed-race children may force the researcher to make decisions about racial self-identity that are not appropriate.
Research on the development of spoken language has focused largely on middle-class preschool children. In contrast, lower-class children whose mothers have less education tend to be slower and less accurate than children of comparable age and vocabulary size whose mothers have more schooling. In general, these slower rates of language learning reflect children’s disadvantaged backgrounds. This trend is true for Latino preschool children learning Spanish as well as preschoolers in the United States learning English as their first language (Hurtado, Marchman, & Fernald, 2007).

Characteristics of the tester, experimenter, or conversational partner are also important. In general, preschool children will perform better with a familiar adult. There is also some indication that children of color may perform better with adults with the same identity.

Some children found in the general population may be excluded when the study attempts to determine typical development. These may include children with known handicaps; bilingual children; twins, triplets, and other multiple births; and children in institutional care or full-time nursery school. Children may also be excluded who are likely to move during the course of the study, such as children of migrant workers or military service members, or whose parents were deemed uncooperative or unreliable (Wells, 1985). With each exclusion, the “normal” group becomes more restricted and, thus, less representative.

In order to draw group conclusions, subjects must be matched in some way. Although the most common way to group children is by age, such matching of subjects in language-development studies may be inappropriate because many language differences reflect developmental changes in other areas. Therefore, reliable age-independent measures of development, such as level of cognitive development, may be a better gauge of real developmental differences and may allow more appropriate comparisons of children’s language development.

**Amount of Language Collected**

The problem of the appropriate amount of a child’s language to sample becomes especially critical with low-incidence language features, such as passive sentences. Usually at least 100 utterances are needed in order to have an adequate sample, although the sample size depends on the purpose for which it is collected. High reliability on measures such as number of different words and mean utterance and sentence length in morphemes may require at least 175 complete and intelligible utterances. Elements that occur less than once in 100 utterances may not occur within the typical sample of that length. In addition, a single occurrence is very weak evidence on which to base an assumption that a child has acquired a linguistic feature. This assumption is strengthened, however, if a large proportion of the individuals being studied exhibit this linguistic element.

As mentioned, the amount of language collected will vary with the language feature being studied. Pragmatic aspects of language, which vary with the context, may require the inclusion of several contexts to provide an adequately varied sample. Such language uses as conversational openings, which occur only once in each conversation, would require varied contexts in order to enable a researcher to reach even tentative conclusions.

Resources such as personnel, time, and money are always limited. A researcher must decide on an appropriate sample size and an adequate level of analysis. In general, the larger the sample of children and/or speech, the fewer data it is possible to analyze. Conversely, the more detailed the analysis, the fewer children or the smaller the amount of speech it is possible to sample.

**NATURALNESS AND REPRESENTATIVENESS OF THE DATA**

Any sample should fulfill the twin requirements of naturalness and representativeness. Even testing should attempt to use familiar situations with a child in an attempt to meet these two requirements. A conversational sample will be more natural if the participants are free
to move about and are uninhibited by the process of sample collection. A representative sample should include as many of the child’s everyday experiences as possible. Unfortunately, little is known about the range and frequency of children’s activities. To address this issue, Wells (1985) sampled randomly throughout the day for short periods.

Each day of collection, Wells collected 24 randomly scheduled samples of 90 seconds’ duration each. Samples were scheduled so that four occurred within each of six equal time periods throughout the day. Eighteen of the 24 samples, totaling 27 minutes of recording, were needed for analysis. This allowed a possible 25% of the samples to be blank as a result of having been recorded while the child was beyond the range of the microphone. Two samples from each of the six time blocks were randomly chosen for transcription. After these had been transcribed, the process continued randomly with the remaining six samples until 120 intelligible utterances had been amassed. The remaining utterances were not transcribed for analysis. This procedure was followed once every three months for two years for each child.

As you can see, it is not always easy to obtain natural and representative language data. At least three potential factors may be problems. One problem is the observer paradox. Stated briefly, the absence of an observer may result in uninterpretable data, but the presence of an observer may influence the language obtained, so that it lacks spontaneity and naturalness.

The presence of an observer can also affect the type of sample collected. The behavior of the child and the conversational partner may be influenced by the presence of another person. For this reason, Wells (1985) collected samples on a tape recorder, with no observer present. The recorder was programmed to begin taping at randomly assigned times throughout the day. In contrast, Brown (1973) included two observers: one to keep a written transcript of the linguistic and nonlinguistic behaviors of the parent and child and the other to tend the tape recorder and to be a playmate for the child.

The absence of an observer may also complicate the process of determining the exact context of the language sample. At the end of each recording day, parents might be asked to identify contexts by the activity and participants present, although the reliability of such recalled information is doubtful (Wells, 1985). In addition, the immediate nonlinguistic context of each utterance cannot be reconstructed from audiotape alone. Digital audio and video recording may address this concern.

A second problem is a child’s physical and emotional state at the time the information is collected. Usually, a child’s caregiver is asked to comment on the typicalness of the child’s performance.

A third problem relates to the context in which the sample is collected. Quantitative values—such as mean or average length of utterances (MLU) or the number of utterances within a given time, or the number of root words—vary widely across different communication situations and partners (Bornstein, Painter, & Park, 2002). For example, a play situation between a mother and child elicits more language than one in which a child plays alone. Productivity, or the amount of language, may be even more affected by a child’s conversational partners than by different situations (Bornstein, Haynes, Painter, & Genevro, 2000).

Occasionally, information is collected in experimental or test-type situations. The rationale for collecting this type of data is that, through manipulation of the context, a linguist can obtain language features from a child that may not be elicited in conversation. Unfortunately, the language obtained is likely to be divorced from meaningful contexts in the child’s experience and thus does not represent the child’s use of language to communicate with familiar conversational partners in everyday contexts. Theoretically, the most representative sample should be elicited in the home for preschoolers and in the home or classroom for older children, with a parent, sibling, or teacher as the conversational partner.

Language samples should be representative in the two ways discussed previously. First, the population sample from which the language is collected should be representative
of all aspects of the total population. Second, each child’s language sample should be representative of his or her typical language performance. This is best ensured if the sample is collected in a variety of typical settings in which a child is engaged in everyday activities with his or her usual conversational partners.

**COLLECTION PROCEDURES**

Questions relative to collection of the language sample must of necessity concern the presence or absence of a researcher and the actual recording method. Wells (1985) attempted to minimize observer influences by having the child wear a microphone that transmitted to a tape recorder preprogrammed to record at frequent but irregular intervals throughout the day. Of course, there are problems with this process, such as the compactness and sensitivity of the microphone transmitter. In contrast, Brown (1973) used two researchers in the setting, while data were recorded on a tape recorder. This concern is somewhat addressed by the compactness of modern digital recording devices.

Several collection techniques exist, such as diary accounts, checklists, and parental reports, as well as direct and digitally recorded observation. The first three are alternatives to researcher observation and have been used effectively in the study of early semantic and morphologic growth. Such methods enable researchers to collect from more children because they are less time-consuming and have been pronounced reliable and valid while remaining highly representative.

Electronic means of collection seem essential for microanalysis. Videotaping, while more intrusive, is better than recording audio alone because it enables the researcher to observe the nonlinguistic elements of the situation in addition to the linguistic elements. Although useful, collecting written transcription within the collection setting is the least desirable method for microanalysis. First, it is easy to miss short utterances. Second, it is nearly impossible to transcribe the language of both the child and the conversational partner because of the large number of utterances within a short period of time. Third, transcription within the conversational setting does not enable the researcher to return to a child’s speech for missed or misinterpreted utterances.

The language sample should be transcribed from the recording as soon after it is collected as possible. Caregivers familiar with a child’s language should be consulted to determine if the sample is typical of the child’s performance.

Because transcription offers many opportunities for error, studies should ensure intra- and inter-transcriber reliability. This is not always easy to accomplish. Several factors contribute to transcription errors, including the type of speech sampled, the intelligibility of the child, the number of transcribers, the level of transcription comparison, and the experience of the transcriber(s). In general, factors such as (1) the more defined the speech sampled, the better the intelligibility; (2) the greater the number of transcribers, the larger the unit of comparison; and (3) the more experienced the transcriber result in a better the chance of having an accurate transcript. The type of speech sample may range from individual words to whole conversations. Larger units are more difficult to transcribe accurately. The use of more than one transcriber reduces the possibility of errors if the transcribers compare their transcriptions and resolve their differences in a consistent manner. Finally, lower levels of comparison, such as phonemes, increase the likelihood of error because of the precise nature of such units.

**ANALYSIS PROCEDURES**

Actual analysis may be ticklish, especially when trying to determine the bases for that analysis. For example, MLU is still the most common quantitative measure of language growth, although its value is questionable. In general, quantitative measures, such as numerical scores and MLU, are inadequate for describing language development in detail. Other quantitative values might include total number of words, number of words
per clause, or clauses per sentence. Such values collapse data to a single figure. Breadth of behavior might be obtained by the number of different forms used by a child, such as number of different words and number of unique syntactic types (Hadley, 1999).

In contrast, qualitative research uses a variety of methods within natural situations or contexts to describe and interpret human communication. Given the interwoven character of communication and social interaction, it seems logical to study the two together. As a result, language is studied as a social tool used within the complex relationship of context and communication. Thus, qualitative research is holistic and emphasizes communication’s synergistic nature.

By their nature, qualitative research methods change the units being studied. A single word or utterance cannot be analyzed as a separate entity but must be examined in the context of surrounding utterances, topics, or conversation or between partners.

**Determining Age of Mastery**

It is also difficult to determine when a child or group of children actually knows or has mastered a language feature. Criteria for establishing that a child knows a word or a feature have not been established. For example, with word knowledge, the researcher must have clear evidence that a child comprehends the word. In contrast, production criteria would probably be based on spontaneous use and consistent semantic intent. With young children, a researcher would also note consistent phonetic form and semantic intent, with decisions of knowledge not necessarily based on whether the form and meaning are related to an adult word.

Usually, mastery is based on children using a feature in 90% of the obligatory locations or based on 90% of the children using the feature consistently, but these percentages vary among individual researchers. Some researchers consider the average age for acquisition to be that point at which 50% of children use a language feature consistently. Of course, such measures are complicated by the complex nature of most language features and the extended period of time often needed for mastery. For example, forms such as correct use of *be* may take several years from first appearance to full, mature use.

An example of one real-life analysis difficulty may be illustrative. In a study of preschool pronoun development (Haas & Owens, 1985), a colleague and I were very surprised to find no errors in pronoun use in conversations among children even as young as 2. The children had adopted the rule *when in doubt, use a noun*. Thus, analysis that focused on pronouns only yielded no errors. When analysis expanded beyond pronouns, however, we found overuse of nouns.

**Cross-Language Studies**

Cross-language studies are usually undertaken in order to investigate universality, linguistic specificity, relative difficulty, or acquisitional principles. Studies of universality attempt to determine which aspects of language, such as nouns and verbs, appear in all languages. Researchers also look for developmental similarities across different languages. For example, although children in countries with lower standards of living tend to have smaller comprehension or production vocabularies, there are similarities in vocabulary growth. Across children ages 2 to 9 years, comprehension slightly exceeds production and both increase with age (Bornstein & Hendricks, 2012).

Studies of linguistic specificity attempt to determine whether development is the result of universal cognitive development or unique linguistic knowledge. The development of spatial (location) and temporal (time) terms, for example, seems to be based on cognitive knowledge as well as on specific linguistic forms used to mark that knowledge. English uses *in* for containment and *on* for support. In contrast, Spanish
uses *en* for both, and German uses *auf, an,* and *um* just for *on*. In Chalcatongo Mixtec, an Otomangucan language of Mexico, speakers use body parts for spatial terms, such as “The man is *animal-back* the house” for “The man is *on* the roof” and “The cat rug’s *face*” for “The cat is *on* the rug” (Bowerman, 1993). While the concepts *in* and *on* seem straightforward, linguistic expression differs greatly.

Relative difficulty studies look for language-development differences that may be explained by the ease or difficulty of learning structures and forms in different languages. For example, the passive sentence (e.g., *The boy was struck by the car*) form is difficult in English and is mastered much later than the relatively easier form in Egyptian Arabic, Turkish, Sesotho, and Zulu. These languages are very different from each other, a situation that raises many other questions. Unlike Turkish, for example, the African language Sesotho has a complex intonational system applied at the morphologic level.

Finally, studies that investigate acquisitional principles try to find underlying language-learning strategies that children apply regardless of the language being acquired.

There are two basic methods of collecting crosslinguistic data. The first is to gather a range of studies completed in different languages, even though these studies may differ in their aims and methods. This method may be quicker, but because the studies have already been completed, it may not be easy to draw conclusions from such a diverse collection. The second method is to use a similar design across subjects from different language groups. This method yields much more definitive data, with fewer complicating variables, but it takes much more time and effort to organize, coordinate, and collect.

How can we compare language development across languages? MLU would vary with each language and with the inflectional or word-order nature of that language. Age comparisons ignore linguistic differences. Vocabulary greatly affects MLU, suggesting that vocabulary size might provide a better basis for crosslinguistic comparisons of grammatical development (Devescovi et al., 2005). In short, there is no one good method.

### Conclusion

**Within the last half century,** linguists have proposed several theories of language acquisition. During that time, many linguists did not adhere strictly to one theoretical construct but preferred to position themselves somewhere in between. This apparent fence straddling reflects the complexity of language and language acquisition.

Complex topics such as language and language development require a great amount of study and research. If the data that result from such research are to be of value beyond the children from whom they were collected, researchers must consider a great variety of questions relative to the language features studied, the children selected, the amount of data, and the collection and analysis procedures. Accurately describing child language development is a difficult and time-consuming job.

### Discussion

There is most likely a biological basis for language. Human brains are specialized for analyzing sequential information such as language. Language most likely reflects brain functioning.

An infant also has certain innate social and communicative abilities that enable the child to establish early communication with caregivers. In turn, these caregivers interact in such a way as to ensure the survival of the infant. It is within these interactions that the child is exposed to language, the source of the child’s own language use.

From a well-established communication system and armed with certain cognitive skills, the infant begins to use the language of those around him or her. This language has many uses, most already
established through gestures. In other words, the language is not just an imitation of the language that surrounds the child; it also works for the child.

Without linguistic research, these data could not exist. Look at the references and you will get some idea of the range of this research. I have given you some of the issues in collection and analysis of linguistic data. Some of you may be interested in such research. We can always use new data, especially in other languages.

You may be interested in the research data collected by linguists and others who study child language. The Child Language Data Exchange System, or CHILDES, database contains information on child language, actual child language transcripts, and software tools for analysis. You can access this database at http://childes.psy.cmu.edu/.

Main Points

- Generativists/Nativists assume that children learn language with the aid of innate rules or principles related to the structure of human language.
- Generativists/Nativists characterize language as a set of abstract algebraic rules and a set of meaningful linguistic elements or words that children learn and then link back to language universals.
- Constructionists assume that children learn language from the input to which they are exposed using general brain processes.
- Constructionists believe language structure emerges from language use.
- Constructionists characterize language as a set of meaningful rules and a set of meaningful linguistic elements or words.
- Four goals of child language research are as follows:
  1. To confirm general linguistic principles
  2. To discover principles of language development
  3. To clarify the relationship of language to development in other areas, such as cognition
  4. To provide a more or less theoretical description of language development
- Research requires careful consideration of many variables including the method of data collection, sample size and variability, naturalness and representativeness of the data, and collection and analysis procedures.
- The goals of cross-language studies are as follows:
  1. To determine what aspects of language are universal
  2. To determine whether development is the result of universal cognitive development or unique linguistic knowledge
  3. To identify underlying language-learning strategies

Reflections

1. Explain the differences between the Generativist/Nativist and Constructionist models of language with regard to the brain.
2. Explain the different ways in which a child is assumed to learn grammar in the Generativist/Nativist and Constructionist theories.
3. Explain the two primary methods of data collection and the types of data generated by each.
4. Explain the way in which language sample and population sample size and variability affect the data collected.
5. Why are natural and representative language samples desired, and what are the potential problems that can interfere with collecting these types of samples?
6. How can the method of collection affect the language sample collected?
7. Discuss the issues related to analysis that may affect the results of language studies.
8. Discuss the primary areas of investigation undertaken in cross-language studies.