Chapter 9: Language

Overview

Talking about language is where we start getting into what really makes us special as human beings. There's no question that we dominate the world—the dolphins and the chimps have nothing on us—and it is no coincidence that we are better able than any other animal to communicate. Language helps us create and use mental representations; it helps us solve problems; and it allows us to devote a great deal of our life to formally acquiring an education.

Psycholinguistics is the branch of cognitive psychology interested in how we comprehend, produce, acquire, and represent language in the mind. As an introduction to language, this chapter discusses the basic structure of language beginning with **phonemes** and **morphemes**, which are combined to build words. Words alone are not enough to produce language. For language to make sense, they have to follow rules called **syntax**, and they must be combined in such a way that they are meaningful. The study of the meaning of words and sentences is called **semantics**.

Noam Chomsky's contribution to an understanding of language cannot be over-stated. He argued that all human beings are born with innate language skills—a compelling argument because it explains how children are able to learn language so quickly and relatively easily. Learning thousands of words and the rules used to combine words into acceptable sentences is a much more complex, difficult task than learning to add 2+2. The average five-year-old, however, has no trouble forming sentences but cannot do the math.

The text outlines evidence for Chomsky's proposed **language acquisition device**. An extra piece of evidence that is worth mentioning in some detail is the existence of pidgin and creole languages. A pidgin language is one that comes about when speakers of different languages are in close contact and have to interact. People in this situation develop a means of communicating that is just complex enough to get a point across. In Louisiana in the 1800s, for example, there were large groups of Acadians (French-speakers) and English-speaking people. They put together a pidgin language that was very rudimentary, with no recognizable grammatical rules. A creole language occurs when the children of those groups of people acquire the pidgin language as their native language. Despite the fact that the pidgin language is so simple, the creole language that is developed by the children of these groups is quite sophisticated. A creole language has grammatical rules and a structure that is similar to other established languages. It is the children who develop the creole language; children can automatically, naturally introduce grammar to a language. It would be hard to conceive of stronger evidence for innate language abilities.

Language production, in particular, is an incredible ability. We are able to communicate complex thoughts on-the-fly. Without any planning, we can impart a great deal of information. Consider what goes into producing a single sentence: you have to choose a few words (out of thousands of possibilities) that convey the correct meaning; you have to take grammar into consideration (even in casual conversation, most of us put together largely grammatically-correct sentences); and you have to actually produce the correct phonological sounds to translate thoughts into auditory form. Our remarkable skill in understanding and producing language quickly and effortlessly can make it seem as though the task is easier than it is. A good demonstration of how difficult it is to make sense of even single sentences is gained from attempts to build computer programs that translate from one

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language to another. In the 1960s, American intelligence officials wanted a computer program that would automatically convert sentences from English to Russian and Russian to English. One attempt to do so involved programming every English word and the best Russian translation for each. Here's the problem: the English sentence "The spirit is willing but the flesh is weak" translated to "The vodka is good but the meat is rotten." The translation doesn't at all capture the meaning of the original sentence. The development of the Jeopardy-playing computer, Watson (see video reference below) is a fascinating demonstration of the challenge of language comprehension.

The case of Genie (see video reference below) provides a gripping account of one individual who, it seems, missed the critical period for language acquisition. Genie was discovered when she was 13, after having been essentially imprisoned for most of her life. The severe lack of human interaction resulted in many problems but perhaps the most interesting of these is her slow language development. She was immediately put into a program of language remediation and while she showed some language gains, she had definite limitations. As they are watching the movie, ask students to take note of what Genie was and was not able to learn. She did acquire a large vocabulary but she was never able to use proper grammatical rules and she never learned to properly pronounce the different sounds of speech.

Learning Objectives

In this chapter students will:

- Explore the structure of language.
- Outline Chomsky's approaches to language.
- Review evidence for the innateness hypothesis and identify the "poverty of the stimulus" argument.
- Examine the process of communication and comprehension.
- Evaluate evidence for linguistic relativity.

Key Concepts with Illustrative Examples

deep structure versus surface structure (see page 271)

It can be said that any sentence has two levels: the meaning (the deep structure) and the words that compose it (the surface structure). Understanding a sentence requires transforming surface structure into deep structure. Small changes in surface structure can sometimes completely change the deep structure. For example, "eats, shoots, and leaves" might refer to the actions of a person in a gangster movie; "eats shoots and leaves" might refer to the diet of a panda bear.

egocentric speech (see page 285)

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Egocentric speech does not consider the listener's viewpoint. Young children, as they are less capable of appreciating the perspective of another person, often use this type of speech. For example, when talking to his grandmother on the phone, a young child might point to an object and ask what it is, not taking into account that Grandma can't see what he's pointing to.

figurative language (see page 282)

Figurative language includes various figures of speech such as metaphor and irony. It is often used to make language more descriptive and interesting. For example, if after a difficult class you were to say, "My head is spinning from all the information I learned," you would be using figurative language.

hesitation pauses (see page 283)

Mark Twain is quoted as having said, "The right word may be effective, but no word was ever as effective as a rightly timed pause." While this may be true, hesitation pauses, which are pauses in speech that are often characterized by disfluencies such as *um, like,* or *uh,* are more distracting than effective. Hesitation pauses appear to occur more often when there is more variation to terminology in speech, as it seems that the speaker is searching for the "right" word.

language acquisition device (see page 272)

Chomsky proposed that humans innately possess a language acquisition device (LAD) that contains the principles of universal grammar that can be applied to any language. LAD helps to explain how young children are able to quickly acquire a first language.

linguistic relativity (see page 292)

Linguistic relativity is the notion that there is a tie between how people *speak* about things and how they *think* about things. For example, in the Hopi language (a Native American language), there is no past tense for verbs. Some linguists have suggested that people whose native language is Hopi may actually have difficulty thinking about the past.

phoneme vs morpheme (see page 267)

Phonemes are the smallest unit in language that distinguishes one word from another. For example, the words "mill" and "miss" only differ by replacing the phoneme /*l*/ with the phoneme /*s*/. Each language has its own set of phonemes. The English language includes 40 phonemes whereas Hawaiian only has 14.
Phonemes can be combined with other phonemes to form morphemes, which are the smallest meaningful units of language. For example, the phonemes /*m*/, /*a*/, and /*p*/can be combined to form the morpheme /*map*/.

phonological dyslexia (see page 289)

There are many subtypes of dyslexia, one of which is phonological dyslexia. Those who have this disorder are able to recognize words as entire units, but have difficulty reading words letter by

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letter (phonologically). For example, if you ask a person with phonological dyslexia what letter the word "bold" started with, they would find it difficult to isolate the "b" and sound it out.

pretense theory of irony (see page 283)

The pretense theory of irony is the idea that when speaking ironically, people are only pretending to mean what they say. Although sarcasm may seem to be the same as irony, it differs in the intention when using it. Whereas irony is typically not meant to be hurtful or offensive, sarcasm is intended to criticize or to hurt the feelings of the receiver.

zone of proximal development (see page 287)

Vygotsky proposed that it is meaningful to conceive of the distance between the level of problem-solving that can be achieved independently and the level of problem-solving that may be achieved under the guidance of a more capable person. A five-year-old may be able to print her own name by herself (the lower limit of the zone). If asked to write the word "octopus," she is likely to falter. However, if a literate adult slowly spells the word, she can probably print the letters one-by-one successfully (the upper limit of the zone).

Discussion and Debate Ideas

1. Encourage students to consider the uniqueness of human language. Human beings are certainly not the only species that communicates using sound and actions. Other animals have natural forms of communication and they can be taught to use human sign language. Ask students if it is meaningful to make a distinction between animal communication and human language. Be sure to point out that other animals are not capable of every component of human language. An animal has never successfully learned to incorporate grammatical rules. This, of course, is crucially significant—it is grammar that allows for communicating about the past and the future and for discussing hypothetical situations and abstract ideas.

2. There was once a lively debate over the roles of nature versus nurture in language acquisition. Chomsky and Skinner argued on opposing sides. Is the debate worth having anymore? Or should we be satisfied to conclude that human language is both innate and learned?

3. Hesitation pauses serve the communicative function of indicating problems in attempting to produce output. The text describes the example of humanities and social science lecturers pausing frequently as they are talking about loosely-defined topics. Have students generate other examples. Jerry Seinfeld has described one such example: in asking a favour of someone, people tend to time their pause according to how big the favour is. "Can you do me a favour, hand me that pencil" is different in terms of prosody than "Can you do me a favour . . . [pause] . . . drive me to the airport" or "Can you do me a favour . . . [longer pause] . . . let me stay at your place for a month."

4. Have the class consider why second language instruction is often unsuccessful. After many years of French classes, many Anglophone Canadians graduate high school without being able to speak French fluently. How could we apply principles of how young children learn a first lan-

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guage to older individuals learning a second? How are the young child and the older individual different in ways that could make a difference when learning a language?

5. Discuss the use of irony in current media. Have students suggest popular television shows that are based on ironic speech (some examples would be the Simpsons, Family Guy, The Big Bang Theory, etc.). How might the increase in the use of ironic speech in the media influence our social interactions?

6. In its true form, the term "literacy" refers to the ability to read and write, sometimes extended to include the metalinguistic ability to talk or write about text. How does this original meaning connect to the term "computer literacy"?

7. Have students build a hierarchy for language beginning with phonemes and extending up to sentences. This can be taken further as sentences are combined to form paragraphs, etc.

8. Language can often be ambiguous as exemplified by a sentence such as "The boy threw stones at the bank". Have students suggest ways in which we might resolve the ambiguity to discern if the boy threw stones at a financial institution or the side of a river.

9. If a culture does not have a word to describe an object or a characteristic of an object, e.g., colour, does it change the way they experience it? This can be discussed in the context of the Hopi language, or the Grue culture.

Further Reading, Media Suggestions, and Teaching Aids

1. **Bicks, M. 2012. *Smartest Machine on Earth* [motion picture]. Nova, PBS.**
   http://topdocumentaryfilms.com/smartest-machine-on-earth/

   This is an interesting movie about the development of Watson, the computer that became a Jeopardy champ in 2011. To win at Jeopardy, one needs to have a very large knowledge base and very quick timing (neither of which are problematic for a computer), but one also needs to understand the clues. The video emphasizes how difficult that is for a computer (and how easy it is for a human being).

2. **Garmon, L. 1994. *Secret of the Wild Child* [motion picture]. Nova, PBS.**
   http://www.youtube.com/watch?v=hmdycJQi4QA

   This is an hour-long documentary on the compelling case of Genie, a child who was not exposed to language before the age of 13. Footage of Genie and the researchers who worked with her is included. Genie learned to use words but was never able to speak grammatically. Her case can be seen as support for the notion of a critical period of language acquisition.

3. **The Sapir-Whorf Hypothesis:**
   http://youtu.be/NAy-qkRP-vo

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This video explores the Sapir-Whorf hypothesis and the diversity of language between various cultural groups of the world. It also discusses the identification of colours, similar to what is discussed in the chapter.

4. **Pinker, Stephen. 2012. *Linguistics as a Window to Understanding the Brain*. Big Think.** https://www.youtube.com/watch?v=Q-B_ONJIEcE

   This video features Stephen Pinker, Harvard University, discussing the link between language and cognitive processes in the brain.

5. **Language and Communication – Vanguard University:** http://www.vanguard.edu/psychology/amoebaweb/language-and-communication/

   This site offers a wide variety of links to resources and activities related to the chapter's topics.

Homework or Study Questions

1. **Summarize Vygotsky's contributions to language theory.**

   One interest of Vygotsky's was the relationship between language and thought. Vygotsky argued that egocentric speech (which does not take into account the listener's perspective) does not truly disappear as a child gets older; instead, it becomes inner speech. Inner speech, according to Vygotsky, is important in regulating thought and planning cognitive operations.

   Vygotsky also coined the term "zone of proximal development." Inherent in this concept is the role of social relationships in cognitive processes—collaborative effort is as important as independent abilities. As well, spoken directions and strategies provided by the problem-solving partner can be incorporated into inner speech.

2. **With reference to a specific example, explain Chomsky's notion of parameter setting.**

   A universal grammar needs to be general enough to accommodate the specifics of any language. As such, it must contain a variety of switches that can be set to various parameters. For example, the position of the verb, relative to the object of a sentence, is different in English compared to German. A universal grammar contains a switch for verb position that can be set to a particular parameter for a particular language. An English-speaker sets that parameter at "verb before object"; a German-speaker sets it at "object before verb."

3. **Describe Grice's conversational maxims. Think of an example of a common violation of at least one of the maxims.**

   Grice proposed that conversations conform to a set of what are called "conversational maxims" (i.e., unwritten rules of good conversation). One maxim is quantity; utterances should provide only as much information as the listener needs to understand a situation. The second maxim is quality; utterances should be truthful. The third maxim is relation; utterances should be relevant to the current discourse. Finally, the maxim of manner states that the point of an utterance should be clear. In sum, be informative, be accurate, be relevant, and be clear.

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These rules are quite often violated. Consider this statement: "John, can you pass the salt?" One could argue that this violates several of the maxims. The question is longer than necessary (quantity), it is somewhat disingenuous since, assuming John is able-bodied, he is capable of doing that (quality), and, on the surface, it is unclear (manner). John, though, is likely to interpret the question as an indirect request to pass the salt. Although it violates conversational maxims, is seen as more polite than the direct statement, "Pass the salt."

4. **Distinguish between three spatial frames of reference. Give a specific example of the relationship between frame of reference and language.**

Intrinsic frame of reference is based on relations between the objects of interest. A picture may be hung under a clock. Relative frame of reference takes into account the position of the observer. A picture may be hung to the right of a door (from the observer's perspective). Relations that refer to an invariant set of coordinates are said to use an absolute frame of reference. A picture may be hung on the north wall. Participants in studies by Levinson and colleagues were shown a toy that was moved along a path by the experimenter. After a delay and a 180° rotation, participants were to report the path that the toy had followed. Using a relative frame of reference would lead participants to indicate one direction and using an absolute frame of reference would lead to indicating the opposite direction. Dutch speakers tended to choose the former and Tzeltal speakers tended to choose the latter. This is consistent with the habitual frame of reference for those two languages.

5. **How did Chomsky distinguish between grammar and semantics?**

Grammar refers to a set of rules that is capable of producing all possible sentences whereas semantics is the study of meaning. While a sentence can be grammatically correct, it is not necessarily meaningful. This led Chomsky to suggest that grammatical and semantic processes are different.

6. **Review the evidence that led Chomsky to suggest the existence of the language acquisition device.**

Chomsky believed that linguistic competency is innate. He also believed that children learn language too quickly to have started language acquisition from scratch. Lastly, he suggested that adults' language contained too many errors and was too incomplete for children to learn what they needed from adults. This led him to suggest the existence of the language acquisition device containing general principles of language.

7. **Describe the influence of parents and teachers in language acquisition.**

Parents help correct the errors that children make during acquisition through parental reformulations. In this manner, they inform children that they have made a mistake, but also provide examples of correct speech. Teachers build upon what children learn from parents in that they contribute to their syntactic development and help them improve their ability to organize words into grammatical sentences.

8. **Explain the concept of recursion in language. Provide an example.**

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Recursion is the capacity of any one component to contain any number of similar components. For example, the sentence, "After a heavy rainfall, the sun began to shine." In this example, the sentence, "the sun began to shine," is part of the larger sentence.

9. **Summarize the difference between phonemes and morphemes.**

   Phonemes are the smallest unit of language. For example, in the word "cat" there are three phonemes: /c/ /a/ /t/. Morphemes are the smallest unit of meaning. For example in the word "unfriendly" there are three morphemes /un/ /friend/ /ly/.

Suggestions for Research Paper Topics

1. How is the existence of pidgin and creole languages strong support for Chomsky's proposed language acquisition device?

2. The textbook describes in some detail the relationship between language and colour perception and between language and spatial frames of reference. What is another manifestation of linguistic relativity? Describe another cognitive ability's inextricable tie with language.

3. With reference to the literature on the dual route theory of reading, put together a plan for reading instruction that could benefit individuals with surface dyslexia. How would you modify the plan to benefit those with phonological dyslexia?

4. In most people, language processing is centred in the left hemisphere of the brain. However, the right hemisphere may be responsible for very high-level, abstract language tasks (e.g., understanding metaphors, appreciating humour and irony, etc.) What evidence can you find for selective deficits in those abilities in people with right hemisphere damage?

5. Sue Savage-Rambaugh's research with bonobo chimpanzee, Kanzi, suggests that animals might have a greater capacity for language than was previously thought. Review the literature for both sides of the debate on the possibility of animals developing language.

6. Review the literature supporting the idea that thought leads to the acquisition of language vs language leads to the development of thought.

7. Review the literature on language acquisition in persons who are born profoundly deaf and are non-lingual. How is the pathway of language development different than in hearing children? How is it similar?

8. Although the textbook discusses phonological and surface dyslexia, there are actually many more subtypes of dyslexia that have been identified. Examine the different subtypes of dyslexia. Describe the similarities and differences between them.

9. The Sapir Whorf hypothesis has often been criticized as having no basis. Summarize the two sides of the debate. What does this hypothesis contribute to our current understanding of language?

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