A. Language Structure (pp. 313–314)

Universals of Language

Mark Ashcraft identifies a number of characteristics shared by all languages. They not only help to define language but also show how it "is the jewel in the crown of cognition," according to cognitive scientist Steven Pinker. Although not an exhaustive list, the following are among the most important features of language.

1. *Semanticity.* The sounds of human language convey meaning. Other sounds we make, such as coughing or clearing our throats, are not part of our language because they do not usually convey meaning.
2. *Arbitrariness.* There is no inherent connection between the symbols in a language and the meanings they convey. For example, the word *dog* bears no inherent resemblance to the four-legged furry creature named by the word. Whale is a small symbol for a very big thing; *microorganism* is just the reverse. Knowledge of a language must involve knowing the arbitrary connections.
3. *Flexibility of symbols.* The principle of arbitrariness makes the connection between symbol and meaning changeable and "inventible." We rather routinely shift our terms for the objects in our world. Early in this century we called cars *automobiles* but that is now a rather archaic term. People also used to play "LPs on their hi-fis."
4. *Naming.* A corollary to arbitrariness and flexibility is naming. We assign names to all the objects in our environment, to all the feelings and emotions we experience, and to all our ideas and concepts. As students look around the room, each object has a name. In a strange setting, we may not know the name of everything, but it never occurs to us that something might therefore not have a name. We are constantly generating or inventing names for the new objects and ideas we need to talk about. Imagine how meaningless the sentence, "I am word processing on my personal computer," would have sounded 50 years ago.
5. *Displacement.* Language enables us to talk about something other than the present moment. By means of verb constructions denoting past and future we can talk about things that are not present but are remembered or anticipated.
6. *Productivity.* This feature, also referred to as *generativity*, is perhaps the most notable characteristic of language. Aside from customary greetings and perhaps some trite phrases, our utterances are ever new. We *generate* sentences rather than repeat them. Language is a creative system as opposed to a repetitive system. The number of possible sentences in a language is infinite. The novelty of language and the productivity it implies formed the basis of Chomsky's critique of Skinner's work.

Ashcraft, M. (1999). *Human memory and cognition* (3rd ed.). New York: Prentice Hall.

B. Language Development (pp. 315–319)

Language Development

Ronald Macaulay discusses the interesting complexity of language development in his fascinating book *The Social Art.* Macaulay notes that children do not learn language totally anew, nor do they learn it like a parrot by memorizing complete utterances. Rather, in the early stages, they do a little of both. What they say is clearly related to adult language and yet is not straightforward imitation, as seen in the following examples: "Her got hurt in the face," "I didn't did it," "Anybody isn't here," "Wear mitten no," "Salt all shut," and "Is it was a snake?"

Children seem satisfied with a rough approximation of adult language and do not attempt to perfect any single utterance before moving on to the next. If they did, they would be limited in the topics they could talk about and would never become fluent speakers of the language. Linguistic competence refers to the ability to produce and understand utterances we have never heard before. Macaulay illustrates with the following sentence: "Karl Marx was playing bridge with Abraham Lincoln, Winston Churchill, and Mary Queen of Scots when Tarzan walked in." No listener has ever encountered this sentence before but anyone who speaks English would immediately understand it.

Children also learn that language is both systematic and creative. Language is both rule-governed and infinitely adaptable to new situations. Macaulay illustrates each characteristic with an example.

To illustrate the systematic nature of language, he says, consider the following numbers and then try to recall them: 3, 9, 2, 7, 8, 1, 2, 4, 3, 7, 2, 9, 2, 1, 8, 7. You probably will recall only seven digits. However, if you rearrange the numbers to read 3, 9, 27, 81, 243, 729, 2187, you'll be able to recall them all. The sequence of digits is produced by multiplying the first number by itself and then multiplying the answer by the original number, and so on. Once the rule becomes clear, it's possible to recognize and repeat even longer sequences of digits. Similarly, we are likely to find an utterance in an unfamiliar language difficult to repeat because we do not know the rules by which it is organized. Once we learn the rules, the problem disappears.

The creative nature of language is apparent from the Simple Language Device (SLD) Chart on the next page. The rules are simple. Choose one word or phrase from column A and combine it with one word or phrase from columns B to F and you will automatically produce a sentence. With a total of only 54 alternatives, the SLD has the capacity to produce 531,441 sentences. Although the sentences may not be very believable, they are grammatical. The SLD has only a small number of words and one rule for combining them. Adult language has a much larger number of words and quite a few rules for combining them into

acceptable utterances. This is the challenge that confronts infants as they begin the long task of becoming fluent speakers of the language spoken by those around them.

Macaulay, R. (1994). *The social art.* New York: Oxford University Press.

Simple Language Device

A	B	C	D	E	F
Suddenly	several	naked	giraffes	ran	into the room
Slowly	six	hairy	Martians	jumped	out of the box
Without warning	those	bloody	students	slipped	between the houses
Amazingly	some	blue-blooded	dalmatians	fled	from behind the trees
Reluctantly	the	laughing	duchesses	skipped	down the road
Carefully	a few	dark	boys	crawled	over the hill
Fortunately	a great many	bald	lawyers	darted	through the tunnel
Cunningly	twenty-two	unscrupulous	octogenarians	danced	across the bridge
In due course	innumerable	dirty	feminists	limped	up the street

Bilingualism

Two-thirds of the world's children are raised as bilingual speakers; however, less than 7 percent of U.S. citizens are bilingual. In *additive bilingualism*, people master a second language with no loss of their first language. As Margaret Matlin explains, English speakers in Quebec typically learn French because they operate a business. In *subtractive bilingualism*, the second language replaces the first language. Historically, North American schools pressured children of immigrants to learn English but only rarely encouraged children to remain fluent in their first language.

One of the important predictors of learning a second language is a person's attitude toward its native speakers. For example, English Canadian students' attitudes toward French Canadians was just as important as their cognitive, language-learning aptitude in determining how well they learned French. The predictors go both ways. Those elementary school English Canadian students who learned French developed more positive attitudes toward French Canadians than did children who remained monolingual.

One reason North American schools did not encourage retention of the first language among immigrant children was the accepted notion that bilingualism led to deficits in thinking. Presumably, the cognitive effort required to master and maintain two languages diminished the child's capacity to learn and store other things. The first carefully controlled scientific studies suggested just the opposite. Bilinguals were more advanced in school, performed better on tests of first-language skills, and showed greater mental flexibility. The findings have been replicated in research around the world.

In her overview of the relevant research literature, Matlin notes that bilinguals seem to have a number of important advantages over monolinguals, including the following:

1. Bilinguals show greater expertise in their first (native) language. English-speaking Canadian children whose classes are taught in French gain greater understanding of English language structure. Bilinguals also are more likely to recognize that a word like *rainbow* has two morphemes and preschool bilingual children are likely to under-stand that a printed symbol represents a word.
2. Those using two languages are also more likely to appreciate the phonological components of language.
3. Bilinguals are better at paying attention to the more subtle aspects of a language task, ignoring more obvious linguistic characteristics. For example, they are more likely to recognize that the semantically incorrect "The cat barks" is grammatically correct.
4. Bilinguals also recognize that the names assigned to concepts are arbitrary. They are more likely to understand that a cow could just have easily been called a deer. On many measures of metalinguistic skills (knowledge about the form and structure of language) bilinguistic children outperform their monolinguistic counterparts.
5. Bilingual children are better at following complicated instructions and are also more sensitive to certain pragmatic features of languages. English-speaking children whose classes are taught in French are more aware that, when you speak to a blindfolded child, you need to supply additional information.
6. Bilinguals tend to perform better on tests of creativity.

Bilingual children perform better on concept-formation tasks, tests of nonverbal intelligence, and on problem-solving tasks requiring that they ignore irrelevant information.

Matlin, M. W. (2009). *Cognition* (7th ed.). Hoboken, NJ: Wiley.