

10:

Thinking and Language

CHAPTER OVERVIEW

Most of Chapter 10 deals with thinking, with emphasis on how people logically—or at times illogically—use tools such as algorithms and heuristics when making decisions and solving problems. Also discussed are several common obstacles to problem solving, including fixations that prevent us from taking a fresh perspective on a problem and our bias to search for information that confirms rather than challenges existing hypotheses. The section concludes with a discussion of the power and perils of intuition.

The rest of the chapter is concerned with language, including its structure, development in children, relationship to thinking, and use by animals. Two theories of language acquisition are evaluated: Skinner's theory that language acquisition is based entirely on learning and Chomsky's theory that humans have a biological predisposition to acquire language.

NOTE: Answer guidelines for all Chapter 10 questions begin on page 274.

CHAPTER REVIEW

First, skim each section, noting headings and boldface items. After you have read the section, review each objective by answering the fill-in and essay-type questions that follow it. As you proceed, evaluate your performance by consulting the answers beginning on page 274. Do not continue with the next section until you understand each answer. If you need to, review or reread the section in the textbook before continuing.

Thinking (pp. 395–410)

David Myers at times uses idioms that are unfamiliar to some readers. If you do not know the meaning of any of the following words, phrases, or expressions in the context in which they appear in the text, refer to pages 280–281 for an explanation: *kin to*; *birdier bird*; *stumbling upon one that worked*; *Try your hand . . . brain-teasers*; *shoot the basketball*; *seat-of-the-pants*; *snap judgment*; *"a broken promise"*; *plagues*; *road tested in the Stone Age*; *flip-flop*; *hunches*; *fuels social conflict*; *filled with straw*; *off-screen . . . displayed on-screen*.

Objective 1: Define *cognition*.

1. Cognition, or _____, can be defined as _____.
2. Scientists who study these mental activities are called _____.

Objective 2: Describe the roles of categories, hierarchies, definitions, and prototypes in concept formation.

3. People tend to organize specific items into mental groupings called _____, and many such groupings often are further organized into _____.
4. Concepts are typically formed through the development of a best example, or _____, of a category. People more easily detect _____ (male/female) prejudice against _____ (males/females) than vice versa.

Objective 3: Compare algorithms and heuristics as problem-solving strategies, and explain how insight differs from both of them.

5. Humans are especially capable of using their reasoning powers for coping with new situations, and thus for _____.
6. Finding a problem's solution by trying each possibility is called _____.
7. Logical, methodical, step-by-step procedures for solving problems are called _____.
8. Simple thinking strategies that provide us with problem-solving shortcuts are referred to as _____.
9. When you suddenly realize a problem's solution, _____ has occurred. Research studies show that at such moments the brain displays a burst of activity in the _____.

Objective 4: Contrast confirmation bias and fixation, and explain how they can interfere with effective problem solving.

10. The tendency of people to look for information that verifies their preconceptions is called the _____.
11. It is human nature to seek evidence that _____ our ideas more eagerly than to seek evidence that might _____ them.
12. Not being able to take a new perspective when attempting to solve a problem is referred to as _____. One example of this obstacle to problem solving is the tendency to repeat solutions that have worked previously; this phenomenon is known as the development of a _____.
13. When a person is unable to envision using an object in an atypical way, _____ is operating.

Objective 5: Contrast the representativeness and availability heuristics, and explain how they can cause us to underestimate or ignore important information.

14. People judge how well something matches a particular prototype; this is the _____.
15. When we judge the likelihood of something occurring in terms of how readily it comes to mind, we are using the _____.

Explain how these two heuristics may lead us to make judgmental errors.

16. (Thinking Critically) Many people fear _____ more than _____, and _____ more than _____, despite the fact that these fears are not supported by death and injury statistics. This type of faulty thinking occurs because we fear:
 - a. _____
 - b. _____
 - c. _____
 - d. _____

Objective 6: Describe the drawbacks and advantages of overconfidence in decision making.

17. The tendency of people to overestimate the accuracy of their knowledge results in _____.
18. Overconfidence has _____ value because self-confident people tend to live _____ (more/less) happily and find it _____ (easier/harder) to make tough decisions.

19. When research participants are given feedback on the accuracy of their judgments, such feedback generally _____ (does/does not) help them become more realistic about how much they know.

Objective 7: Describe how others can use framing to elicit from us the answers they want.

20. The way an issue is posed is called _____. This effect influences economic and business decisions, suggesting that our judgments _____ (may/may not) always be well reasoned.

Objective 8: Explain how our preexisting beliefs can distort our logic.

21. The tendency for our beliefs to distort logical reasoning is called _____.
22. This phenomenon makes it _____ (easier/more difficult) for us to see the illogic of conclusions that run counter to our beliefs.

Objective 9: Describe the remedy for the belief perseverance phenomenon.

23. Research has shown that once we form a belief or a concept, it may take more convincing evidence for us to change the concept than it did to create it; this is because of _____.
24. A cure for this is to _____.

Objective 10: Describe the smart thinker's reaction to using intuition to solve problems.

25. Generally speaking, our cognition is _____ and _____.
26. Intuitive reactions allow us to react _____, and in ways that are usually _____.
27. Smart thinkers check their intuitions against available _____.

Language (pp. 410–418)

If you do not know the meaning of any of the following words, phrases, or expressions in the context in which they appear in the text, refer to pages 281–282 for an explanation: *catapulting our species forward; They are hunting dogs; combine them on the fly; read lips; a Martian scientist; grammar switches are thrown.*

Objective 11: Describe the basic structural units of a language.

- The basic sound units of language are its _____. English has approximately _____ of these units. The basic units of sign language are defined by _____ and _____.
- Phonemes are grouped into units of meaning called _____.
- The system of rules that enables us to use our language to speak to and understand others is called _____.
- The system by which meaning is derived from morphemes, words, and sentences is the _____ of a language.
- The system of rules we use to combine words into grammatically sensible sentences is called _____.

Objective 12: Trace the course of language acquisition from the babbling stage through the two-word stage.

- By _____ months of age, babies can read lips and discriminate speech sounds. This marks the beginning of their _____, their ability to comprehend speech. This ability begins to mature before their _____, or ability to produce words.
- The first stage of language development, in which children spontaneously utter different sounds, is the _____ stage. This stage typically begins at about _____.

months of age. The sounds children make during this stage _____ (do/do not) include only the phonemes of the language that they hear.

8. Deaf infants _____ (do/do not) babble. Many natural babbling sounds are _____ - _____ pairs formed by _____.
9. By about _____ months of age, infant babbling begins to resemble the household language. At about the same time, the ability to perceive phoneme differences is _____ (lost/acquired).
10. During the second stage, called the _____ stage, children convey complete thoughts using single words. This stage begins at about _____ year(s) of age.
11. During the _____ stage children speak in sentences containing mostly nouns and verbs. This type of speech is called _____ speech.
12. After this stage, children quickly begin to utter longer phrases that _____ (do/do not) follow the rules of syntax.

Objective 13: Discuss Skinner's and Chomsky's contributions to the nature-nurture debate over how children acquire language, and explain why statistical learning and critical periods are important concepts in children's language learning.

13. Skinner believed that language development follows the general principles of learning, including _____, _____, and _____. When there is minimal reinforcement for speaking, as is the case for hearing children whose parents are _____, the learning of spoken language proceeds _____ (more slowly/at a normal pace).

14. Other theorists believe that humans are biologically predisposed to learn language. One such theorist is _____, who believes that we all are born with a _____ in which _____ switches are thrown as children experience their language. This theorist contends that all human languages have the same grammatical building blocks, which suggests that there is a _____.
15. Specific phonemes, morphemes, words, and sentences make up what Chomsky calls the _____ of a language. The underlying meaning of these components of a language make up its _____. Thus, using multiple levels of understanding language development, _____ design the mechanisms and _____ modifies the brain.

Give several examples of linguistic behavior in children that support the argument that humans are biologically predisposed to acquire language.

16. Research by Jenny Saffran has demonstrated that even before _____ year(s) of age, infants are able to discern _____ by analyzing which syllables most often go together.
17. Research studies of infants' knack for soaking up language suggest that babies come with a built-in readiness to learn _____.
18. This ability for _____ is not lifelong. Childhood seems to represent a _____ for mastering certain aspects

of language. Those who learn a second language as adults usually speak it with the _____ of their first language.

Moreover, they typically show _____ (poorer/better) mastery of the _____ of the second language.

19. The window for learning language gradually begins to close after age _____. When a young brain doesn't learn any language, its language-learning capacity _____ (never/may still) fully develops.
20. Considering the two theories together, we can say that although we are born with a readiness to learn language, _____ is also important, as shown in linguistically stunted children who have been isolated from language during the _____ for its acquisition.

Thinking and Language (pp. 418–422)

If you do not know the meaning of the following phrase in the context in which it appears in the text, refer to page 282 for an explanation: *chicken-and-egg questions*.

Objective 14: Summarize Whorf's linguistic determinism hypothesis, and comment on its standing in contemporary psychology.

1. According to the _____ hypothesis, language shapes our thinking. The linguist who proposed this hypothesis is _____.
2. Many people who are bilingual report feeling a different sense of _____, depending on which language they are using. There are an estimated _____ languages in the world today.
3. In several studies, researchers have found that using the pronoun "he" (instead of "he or she") _____ (does/does not) influence people's thoughts concerning gender.
4. Bilingual children, who learn to inhibit one language while using their other language, are better able to inhibit their _____ to irrele-

vant information. This has been called the _____.

5. One study of Canadian children found that English-speaking children who were _____ in French had higher _____ scores and math scores than control children.

Objective 15: Discuss the value of thinking in images.

6. It appears that thinking _____ (can/cannot) occur without the use of language. Athletes often supplement physical with _____ practice.
7. In one study of psychology students preparing for a midterm exam, the greatest benefits were achieved by those who visualized themselves _____ (receiving a high grade/studying effectively).

Summarize the probable relationship between thinking and language.

Animal Thinking and Language (pp. 423–428)

If you do not know the meaning of the following phrase in the context in which it appears in the text, refer to page 282 for an explanation: *rhapsodized; Spying the short stick; Were the chimps language champs or were the researchers chumps?*

Objective 16: List five cognitive skills shared by the great apes and humans.

1. Animals are capable of forming simple _____. Wolfgang Köhler demonstrated that chimpanzees also exhibit the "Aha!" reaction that characterizes reasoning by _____.
2. Forest-dwelling chimpanzees learn to use branches, stones, and other objects as _____. These behaviors, along with behaviors related to

grooming and courtship, _____ (vary/ do not vary) from one group to another, suggesting the transmission of _____ customs.

3. Deception and mirror usage by chimpanzees and other apes suggests to some researchers that these animals may possess a rudimentary understanding of mental states called a _____.

Researchers estimate apes' capacity for reasoning as similar to that of children at age _____.

Objective 17: Outline the arguments for and against the idea that animals and humans share the capacity for language.

4. Animals definitely _____. For example, honeybees do so by means of a _____.
5. The Gardners attempted to communicate with the chimpanzee Washoe by teaching her _____.
6. Human language may have evolved from _____ communications.

Summarize some of the arguments of skeptics of the "talking apes" research and some responses of believers.

PROGRESS TEST 1

Multiple-Choice Questions

Circle your answers to the following questions and check them with the answers beginning on page 275. If your answer is incorrect, read the explanation for why it is incorrect and then consult the appropriate pages of the text (in parentheses following the correct answer).

1. The text defines cognition as:
 - a. silent speech.
 - b. all mental activity.
 - c. mental activity associated with processing, understanding, remembering, and communicating information.
 - d. logical reasoning.
2. A mental grouping of similar things, events, or people is called a(n):
 - a. prototype.
 - b. concept.
 - c. algorithm.
 - d. heuristic.
3. When forming a concept, people often develop a best example, or _____, of a category.
 - a. denoter
 - b. heuristic
 - c. prototype
 - d. algorithm
4. Confirmation bias refers to the tendency to:
 - a. allow preexisting beliefs to distort logical reasoning.
 - b. cling to one's initial conceptions after the basis on which they were formed has been discredited.
 - c. search randomly through alternative solutions when problem solving.
 - d. look for information that is consistent with one's beliefs.
5. The English language has approximately _____ phonemes.
 - a. 25
 - b. 30
 - c. 40
 - d. 45
6. Which of the following is *not* true of babbling?
 - a. It is imitation of adult speech.
 - b. It is the same in all cultures.
 - c. It typically occurs from about age 4 months to 1 year.
 - d. Babbling increasingly comes to resemble a particular language.
7. Mental set and functional fixedness are two types of:
 - a. algorithms.
 - b. heuristics.
 - c. fixation.
 - d. insight.
8. Which of the following has been argued by critics of ape language research?
 - a. Ape language is merely imitation of the trainer's behavior.
 - b. There is little evidence that apes can equal even a 3-year-old's ability to order words with proper syntax.
 - c. By seeing what they wish to see, trainers attribute greater linguistic ability to apes than actually exists.
 - d. All of the above have been argued.