

# 9. Thought and Language

## Objectives

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- Define thinking
- List, define, and explain the structures of thinking
- List, define, and explain processes in thinking
- Explain the elements of language and how language is acquired
- Discuss the ways in which language and thinking interact

## Vocabulary

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analogical reasoning	inductive reasoning	prototypes	strategy
concepts	logic	reasoning	thinking
deductive reasoning	problem solving		

## Background

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Humans share remarkable abilities in the areas of thought and language, the subject of this chapter. As they read it, students will learn to appreciate their own unique abilities to manipulate symbols and to use them to communicate.

This chapter opens by defining thinking as “a set of mental activities that result in the solution of a problem or the attainment of a goal.” Students go on to learn about the biological and psychological bases of thinking, including its structures and processes. They discover new things about themselves and their mental processes while reviewing what psychologists, psycholinguists, and other experts have learned about the brains, the bases and structures of thinking, the processes of thinking, language and thought, and current research in thinking.

By discovering how the thinking process works, students can sharpen their abilities to organize concepts, evaluate propositions, and interpret their own mental images. Their problem solving capabilities also can improve as they discover sound methods for representing problems, generating and evaluating

strategies, and generating solutions. They also will profit by examining themselves for such blocks to effective thinking as mental set and confirmation bias.

Students become acquainted with the various relationships between language and thought as the chapter explains what the elements of language are, how they work together, the factors that affect understanding, and the acquisition of language. They also learn about functions of language, how language influences thought, and research into the thinking and language capabilities of other animals.

### Further Resources

- Bever, Thomas and others, eds. *Talking Minds: The Study of Language in Cognitive Sciences*. Cambridge, Mass.: MIT Press, 1982.
- Sternberg, A. *Metaphors of Mind: Conceptions of the Nature of Intelligence*. Cambridge, Eng.: Cambridge University Press, 1990.

## For Discussion

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### Review

1. What are the methods that bring structure to the thinking process?
2. What are the five major organizing principles for grouping concepts?
3. What are the four strategies to problem solving?
4. In what ways have animals demonstrated their abilities to understand and use language?

### Critical Thinking

1. Why do you think that representing the problem is more important in problem solving than generating solutions?
2. What are the blocks to effective thinking and which do you think are most common?
3. Compare Chomsky's and Skinner's theories about how children acquire language. Which do you think is more correct?
4. Explain the difference between deductive and inductive reasoning and give several examples of each.

## Activities

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### 1. Nonverbal Communication

Divide students into groups of six people, and then into pairs. Invite each pair to choose a topic for a three-minute discussion. The pairs take turns discussing their topics, with other students writing down all nonverbal communications that they notice. When all groups are finished, make a class list of types of nonverbal communication.

### 2. Problem Solving Interviews

To learn more about problem solving techniques, invite students to contact and interview professionals who solve problems for a living—politicians, police officers, counselors, mediators, and conflict resolution specialists. Meet as a class to review and discuss what they learn in these interviews.

### 3. Internet: Animals and Language

Ask students to search the Internet for information about research on animals' capabilities in the areas of language and thought. Have them report their findings to the class.

### 4. Special Sources: Chomsky, Skinner, and more

Invite students to use the library to learn more about the lives and the theories of psychologists and psycholinguists mentioned in this chapter—Noam Chomsky, B. F. Skinner, Benjamin Whorf, George Lakoff, and others.

Name \_\_\_\_\_

## 9. Thought and Language

As you read Chapter 9, write an answer to each question below.

1. List the methods that bring structure to the thinking process.

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2. What are the steps in good problem solving?

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3. What are the semantic factors that affect understanding?

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4. Explain the relationships between phonemes, morphemes, and syntax.

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5. What kinds of questions should you ask yourself when you are making a decision?

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## 9. Thought and Language

Find the best answer for each item. Then circle that answer.

1. What are concepts?
  - a. methods of thinking by fixed sets of rules
  - b. systematic plans for generating solutions
  - c. reasoning from specifics to a general conclusion
  - d. the classes in which we represent and organize the world
2. What is logic?
  - a. method of thinking by a fixed set of rules
  - b. a term for most typical members of a concept class
  - c. a systematic plan for generating solutions
  - d. a type of linguistic analysis
3. Which term means "systematic plan for generating solutions"?
  - a. logic
  - b. prototype
  - c. strategy
  - d. reasoning
4. Which term refers to a set of mental processes used for the purpose of solving a problem or attaining a goal?
  - a. thinking
  - b. reasoning
  - c. proposition
  - d. prototype
5. What are prototypes?
  - a. methods of structural analysis
  - b. methods of problem solving
  - c. biological structures in the brain
  - d. "best examples" or most typical members of a concept class
6. This term means reasoning that changes a situation to a desired state determined by some goal.
  - a. problem solving
  - b. logic
  - c. deductive reasoning
  - d. inductive reasoning
7. Which of these is a process of reasoning that moves from general to specific?
  - a. logic
  - b. inductive reasoning
  - c. deductive reasoning
  - d. problem solving
8. Which process of reasoning compares information with similar information from another context?
  - a. deductive reasoning
  - b. inductive reasoning
  - c. logic
  - d. analogical reasoning
9. Which term means a process of manipulating information in a logical way to reach a conclusion?
  - a. reasoning
  - b. thinking
  - c. conceptualizing
  - d. strategy
10. Which term means a process of reasoning that moves from specific instances to a generalization?
  - a. deductive reasoning
  - b. analogical reasoning
  - c. inductive reasoning
  - d. strategy

Name \_\_\_\_\_

## 9. Thought and Language

Read each description, and write the letter of the correct term on the line.

1. The two areas that play important roles in the biological basis of thought are \_\_\_\_\_.
  - a. propositions and schemes
  - b. the association cortex and the frontal lobe
  - c. social concepts and values
  - d. deductive and inductive reasoning
2. The \_\_\_\_\_ enables humans to think analytically, to reason, to plan, and to assign values to choices.
  - a. association cortex
  - b. pituitary gland
  - c. frontal lobe
  - d. spinal cord
3. A child's ability to recognize a new animal as a dog or a cat is an example of his or her ability to form \_\_\_\_\_.
  - a. value judgments
  - b. concepts
  - c. propositions
  - d. cognitive maps
4. A content outline exemplifies an organizing principle called \_\_\_\_\_.
  - a. schema
  - b. network
  - c. taxonomy
  - d. morpheme
5. Humans' ability to use \_\_\_\_\_ gives them the capability of imagining things that don't exist.
  - a. schemas
  - b. analogies
  - c. mental images
  - d. propositions
6. A script is \_\_\_\_\_.
  - a. a list of actions carried out for a particular purpose
  - b. a method of problem solving
  - c. a type of visual organization
  - d. similar to an outline
7. \_\_\_\_\_ are examples of social concepts.
  - a. Animal, vegetable, mineral
  - b. Lawyer, Muslim, conservative
  - c. Earth, wind, sky
  - d. Auto, train, airplane
8. A \_\_\_\_\_ should always represent a true statement.
  - a. concept
  - b. frontal lobe
  - c. synapse
  - d. proposition
9. Identifying your resources and/or limitations is part of \_\_\_\_\_ in problem solving.
  - a. deductive reasoning
  - b. mental imagery
  - c. conceptual thinking
  - d. representing the problem
10. When you compare information with similar information from another concept, you are using \_\_\_\_\_.
  - a. linguistics
  - b. spatial positions
  - c. analogical reasoning
  - d. informal reasoning

### Essay Question

In what ways can you improve your problem solving as a result of reading this chapter?