

CHAPTER 1 The Science of the Mind

LEARNING OBJECTIVES

- 1.1. Describe the scope and goals of cognitive psychology.
- 1.2. Understand the case of H.M., and the many ways that memory influences our lives.
- 1.3. Describe the limitations of introspection as a method for scientific inquiry.
- 1.4. Compare and contrast classical (Watsonian) behaviorism and cognitive psychology.
- 1.5. Kant's "transcendental method" is sometimes called "inference to best explanation." Explain this method and how it works.
- 1.6. Describe the role, in the emergence of cognitive psychology, that was played by computer science and the development of "computer intelligence."

MULTIPLE CHOICE

1. Which of the following topics is NOT commonly studied within cognitive psychology?
 - a. anger management
 - b. decision making
 - c. memory
 - d. attention

ANS: A DIF: Easy REF: The Scope of Cognitive Psychology
OBJ: 1.1 MSC: Understanding

2. Cognitive processes are NOT necessary for which daily activity?
 - a. reading a newspaper
 - b. studying for a test
 - c. talking on the phone
 - d. breathing

ANS: D DIF: Easy REF: The Scope of Cognitive Psychology
OBJ: 1.1 MSC: Applying

3. Alyssa wants to be a psychologist but is unsure which topic within psychology most interests her. Which of the following topics would be LEAST likely to lead her into cognitive psychology?
 - a. amnesia
 - b. language acquisition
 - c. Lyme disease
 - d. problem-solving strategies

ANS: C DIF: Easy REF: The Scope of Cognitive Psychology
OBJ: 1.1 MSC: Applying

4. Consider the sequence “Betsy wanted to bring Jacob a present. She shook her piggy bank.” Most people, after hearing this sequence, believe Betsy was checking her piggy bank to see if she had money to spend on the gift. This inference about Betsy’s goals depends on the fact that
- our previous knowledge fills in background information whenever we’re understanding an event or conversation.
 - readers are likely to know someone named Jacob.
 - English, unlike other languages, requires speakers to mention all of the people involved in an event.
 - the individual sentences are short.

ANS: A DIF: Easy REF: The Broad Role for Memory
OBJ: 1.1 MSC: Understanding

5. Which of the following statements is LEAST likely to apply to patient H.M.?
- “He cannot remember what he did earlier today, including events that took place just an hour ago.”
 - “He read this story last month, but he was still surprised by how the story turned out.”
 - “Even though he has encountered the nurse many times, he is still unable to recognize her.”
 - “He remembered that it was only a week ago that he’d heard the sad news that his uncle had died.”

ANS: D DIF: Moderate REF: Amnesia and Memory Loss
OBJ: 1.2 MSC: Applying

6. Research with H.M. provides an illustration for which major theme of the chapter?
- Introspection is an important research tool for cognitive psychologists.
 - Cognitive psychology can help us understand a wide range of activities that depend on someone’s ability to remember.
 - Memory is not very important.
 - The disruption caused by brain damage depends on how widespread the damage is, and not on the specific sites that are damaged.

ANS: B DIF: Moderate REF: The Scope of Cognitive Psychology
OBJ: 1.2 MSC: Evaluating

7. Patients suffering from clinical amnesia are characterized by
- memory dysfunction.
 - an inability to recognize patterns.
 - inarticulate speech.
 - impaired language comprehension.

ANS: A DIF: Easy REF: Amnesia and Memory Loss
OBJ: 1.2 MSC: Remembering

8. The term “introspection” refers to the
- process by which one individual seeks to infer the thoughts of another individual.
 - procedure of examining thought processing by monitoring the brain’s electrical activity.
 - process of each person looking within, to observe his or her own thoughts and ideas.
 - technique of studying thought by interpreting the symbols used in communication.

ANS: C DIF: Easy REF: The Limits of Introspection
OBJ: 1.3 MSC: Remembering

9. A participant is asked to look within himself or herself and report on his or her own mental processes. This method is called
- logical inference.
 - reconstruction.
 - introspection.
 - mentalistic study.

ANS: C DIF: Easy REF: The Limits of Introspection
OBJ: 1.3 MSC: Remembering

10. Of the following, introspection is LEAST useful for studying

- a. topics that are strongly colored by emotion.
- b. mental events that are unconscious.
- c. processes that involve conceptual knowledge.
- d. events that take a long time to unfold.

ANS: B DIF: Moderate REF: The Limits of Introspection
 OBJ: 1.3 MSC: Understanding

11. Which of the following statements about introspection is FALSE?

- a. It is the only way to observe conscious events directly.
- b. It is subjective.
- c. It provides strong evidence for hypothesis-testing.
- d. It was a technique used historically to study cognition.

ANS: C DIF: Moderate REF: The Limits of Introspection
 OBJ: 1.3 MSC: Understanding

12. Genie wonders why she can never remember the names of new acquaintances. In search of an answer, she examines and reflects on her feelings about meeting new people. Genie is engaged in which process?

- a. practical rehearsal
- b. introspection
- c. learning history analysis
- d. goal retrieval

ANS: B DIF: Moderate REF: The Limits of Introspection
 OBJ: 1.3 MSC: Applying

13. Introspection was employed as a research tool in the late 1800s because

- a. it was regarded as the only way to observe the mind's contents directly.
- b. it provided data from individuals without any specialized training.
- c. conscious events are just as important as unconscious events.
- d. it provided cognitive psychology's first testable claims.

ANS: A DIF: Moderate REF: The Limits of Introspection
 OBJ: 1.3 MSC: Analyzing

14. Which of the following statements about introspection is FALSE?

- a. A verbal report based on introspection may provide a distorted picture of mental processes that are nonverbal in nature.
- b. Different participants might be using different terms to describe similar experiences.
- c. Introspection provides valuable scientific data, but only after the person doing the introspection has received many hours of training.
- d. Participants cannot possibly introspect about events that are unconscious.

ANS: C DIF: Difficult REF: The Limits of Introspection
 OBJ: 1.3 MSC: Evaluating

15. Which of the following statements provides the most serious obstacle to the use of introspection as a source of scientific evidence?

- a. When facts are provided by introspection, we have no way to assess the facts themselves, independent of the reporter's perspective.
- b. Introspection is only effective for children, because children have not yet learned to inhibit their own self-reports.
- c. Introspection is a valid method only if the person doing the introspection goes into a trancelike state.
- d. The process of reporting on one's own mental events is too slow to be scientifically useful.

ANS: A DIF: Difficult REF: The Limits of Introspection
 OBJ: 1.3 MSC: Evaluating

16. In cognition, as in other sciences, we develop claims that can be tested. These claims are generally referred to as
- research proposals.
 - empirical models.
 - statistical comparisons.
 - hypotheses.

ANS: D DIF: Moderate REF: The Limits of Introspection
OBJ: 1.3 | 1.4 MSC: Understanding

17. A behaviorist, like John Watson, is LEAST likely to believe which of the following statements?
- Our learning history powerfully influences our behaviors.
 - Children are a good source for data.
 - The mind is not amenable to scientific inquiry because it is not easily observed.
 - When it comes to collecting data, introspection is as valuable as behavior.

ANS: D DIF: Moderate REF: The Years of Behaviorism
OBJ: 1.3 | 1.4 MSC: Analyzing

18. Historically, the movement known as behaviorism was to a large extent encouraged by scholars' concerns regarding
- psychotherapy.
 - an exaggerated focus on participants' responses.
 - research based on introspection.
 - a focus on brain mechanisms and a corresponding inattention to mental states.

ANS: C DIF: Easy REF: The Years of Behaviorism
OBJ: 1.4 MSC: Understanding

19. Behaviorists study organisms'
- expectations.
 - desires and motivations.
 - dreams.
 - responses.

ANS: D DIF: Easy REF: The Years of Behaviorism
OBJ: 1.4 MSC: Remembering

20. Of the following, behaviorists argued that _____ were most important in analyzing behavior.
- expectations
 - beliefs
 - wishes
 - learning histories

ANS: D DIF: Easy REF: The Years of Behaviorism
OBJ: 1.4 MSC: Remembering

21. Which of the following would a classical behaviorist be LEAST likely to study?
- a participant's response to a regularly occurring situation
 - a participant's beliefs
 - changes in a participant's behavior that follow changes in the environment
 - principles that apply equally to human behavior and to the behavior of other species

ANS: B DIF: Moderate REF: The Years of Behaviorism
OBJ: 1.4 MSC: Applying

22. Modern psychology turned away from behaviorism in its classic form for many reasons, including the fact that
- classical behaviorism failed to consider the mental processes underlying cognition.
 - humans are more similar to computers than to other species studied in the laboratory.
 - psychology rejected behaviorism's emphasis on an organism's subjective states.
 - an organism's behavior can be changed by learning.

ANS: A DIF: Difficult REF: The Years of Behaviorism
OBJ: 1.4 MSC: Analyzing

23. If Sheila says, "Pass the salt, please," you are likely to pass her the salt. You'll probably respond in the same way if Sheila (a chemistry major) instead asks, "Could you please hand me the sodium chloride crystals?" This observation seems to indicate that our behavior is
- primarily controlled by the physical characteristics of the stimuli we encounter.
 - shaped by the literal meanings of the stimuli we encounter.
 - determined by simple associations among the stimuli we encounter.
 - governed by what the stimuli we encounter mean to us.

ANS: D DIF: Difficult REF: The Years of Behaviorism
OBJ: 1.4 MSC: Evaluating

24. The process of taking observable information and inferring a cause is known as
- mentalist inference.
 - the transcendental method.
 - cause and effect.
 - introspection.

ANS: B DIF: Moderate
REF: The Intellectual Foundations of the Cognitive Revolution
OBJ: 1.4 MSC: Remembering

25. One important difference between classical behaviorism and cognitive psychology is that cognitive psychology
- argues that unobservable mental states can be scientifically studied.
 - rejects the use of human participants.
 - insists on studying topics that can be directly and objectively observed.
 - emphasizes the evolutionary roots of human behavior.

ANS: A DIF: Easy
REF: The Intellectual Foundations of the Cognitive Revolution
OBJ: 1.4 MSC: Analyzing

26. Cognitive psychology often relies on the transcendental method, in which
- mental events are explained by referring to events in the central nervous system.
 - information from introspection transcends behavioral data.
 - researchers seek to infer the properties of unseen events on the basis of the observable effects of those events.
 - theories are tested via computer models.

ANS: C DIF: Easy
REF: The Intellectual Foundations of the Cognitive Revolution
OBJ: 1.4 MSC: Remembering

27. The philosopher Immanuel Kant based many of his arguments on transcendental inferences. A commonplace example of such an inference is a
- physicist inferring what the attributes of the electron must be on the basis of visible effects that the electron causes.
 - computer scientist inferring what the attributes of a program must be on the basis of his or her long-range goals for the program's functioning.
 - biologist inferring how an organism is likely to behave in the future on the basis of assessment of past behaviors.
 - behaviorist inferring how a behavior was learned on the basis of a deduction from well-established principles of learning.

ANS: A DIF: Difficult
REF: The Intellectual Foundations of the Cognitive Revolution
OBJ: 1.4 MSC: Analyzing

28. Cognitive psychologists try to make inferences about causes, based on the observed effects. In this way, cognitive psychologists use methods like those commonly employed by

- a. crime scene investigators.
- b. garbage collectors.
- c. chefs.
- d. construction workers.

ANS: A DIF: Moderate
REF: The Intellectual Foundations of the Cognitive Revolution
OBJ: 1.4 MSC: Applying

29. The “cognitive revolution” is named as such because
- a. the focus changed from behaviors to the processes underlying those behaviors.
 - b. the change was accompanied by violence.
 - c. the focus changed from animals to humans.
 - d. philosophers such as Kant were strongly opposed to the change.

ANS: A DIF: Easy
REF: The Intellectual Foundations of the Cognitive Revolution
OBJ: 1.4 MSC: Understanding

30. The branch of psychology concerned with the scientific study of knowledge is
- a. cognitive psychology.
 - b. humanistic psychology.
 - c. neuropsychology.
 - d. behaviorism.

ANS: A DIF: Easy REF: The Scope of Cognitive Psychology
OBJ: 1.1 MSC: Remembering

31. Wilhelm Wundt would be LEAST interested in an individual's
- a. feelings.
 - b. perception of temperature.
 - c. reaction to a conditioned stimulus.
 - d. recollections.

ANS: C DIF: Moderate REF: The Limits of Introspection
OBJ: 1.3 MSC: Evaluating

32. The seminal work of _____ was instrumental in the development of experimental psychology.
- a. Donald Broadbent
 - b. Wilhelm Wundt
 - c. John Watson
 - d. Immanuel Kant

ANS: B DIF: Easy REF: The Limits of Introspection
OBJ: 1.3 MSC: Remembering

33. Which technique was commonly used in Wilhelm Wundt's laboratory?
- a. introspection
 - b. physiological analysis
 - c. operant conditioning
 - d. classical conditioning

ANS: A DIF: Easy REF: The Limits of Introspection
OBJ: 1.3 MSC: Remembering

34. What evidence supports Edward Tolman's belief that it is possible for rats to acquire new knowledge?
- a. development of a cognitive map
 - b. increased physiological response to a reward
 - c. decreased avoidance of punishment
 - d. observational introspection

ANS: A DIF: Difficult
REF: The Path from Behaviorism to the Cognitive Revolution OBJ: 1.4
MSC: Evaluating

35. Who proposed the concept of a "cognitive map"?
- a. Ulric Neisser
 - b. Frederic Bartlett
 - c. Noam Chomsky
 - d. Edward Tolman

ANS: D DIF: Easy
REF: The Path from Behaviorism to the Cognitive Revolution OBJ: 1.4
MSC: Remembering

36. For 10 days, a group of rats is simply allowed to explore a maze. On Day 11, food is introduced at a specific location within the maze, and the rats find it. On Day 12, the rats move to the food's location just as quickly as rats who had been trained for many days with food in that location. The most plausible explanation for this result is that
- the rats permitted only to explore learned the layout of the maze.
 - the reward of food was not sufficient to shape the trained rat's behavior.
 - the ability of rats to locate food is innate.
 - the rats trained to locate food learned the layout of the maze.

ANS: A DIF: Moderate
REF: The Path from Behaviorism to the Cognitive Revolution OBJ: 1.4
MSC: Analyzing

37. Noam Chomsky criticized _____ and noted that it failed to explain _____.
- Gestalt psychology; visual perception
 - introspection; individual differences
 - behaviorism; language development
 - direct observations; abstract thinking

ANS: C DIF: Moderate
REF: The Path from Behaviorism to the Cognitive Revolution OBJ: 1.4
MSC: Applying

38. Contemporary cognitive psychologists are MOST interested in examining the relationship between _____ and _____.
- stress hormones; behavior
 - memory capacity; lifetime achievement
 - introspection; self-awareness
 - cognitive processes; behavior

ANS: D DIF: Difficult
REF: Research in Cognitive Psychology: The Diversity of Methods
OBJ: 1.1 MSC: Analyzing

39. _____ techniques allow us to scrutinize the precise structure and moment-by-moment pattern of activation in the brain.
- Introspection
 - Neuropsychological
 - Neuroimaging
 - Observational

ANS: C DIF: Easy
REF: Research in Cognitive Psychology: The Diversity of Methods
OBJ: 1.1 MSC: Remembering

40. A Gestalt psychologist is likely to focus on which of the following?
- individual elements of an experience
 - differences in reaction time
 - how elements of an experience interact to form new wholes
 - objective and subjective experiences

ANS: C DIF: Moderate REF: European Roots of the Cognitive Revolution
OBJ: 1.5 MSC: Remembering

41. A(n) _____ is general knowledge about what is typically involved in a type of situation or event.
- schema
 - response set
 - cognitive map
 - instinct

ANS: A DIF: Easy REF: European Roots of the Cognitive Revolution
OBJ: 1.5 MSC: Remembering

42. Schemas reflect a(n) _____ that _____ comprehension of a specific experience.
- objective appraisal; inhibits
 - mental framework; facilitates
 - pattern of thought; inhibits
 - habit; facilitates
- ANS: B DIF: Moderate REF: European Roots of the Cognitive Revolution
 OBJ: 1.5 MSC: Applying
43. The development of computers facilitated research in cognition by
- suggesting hypotheses that framed the steps of cognition as stages of information processing.
 - more accurately capturing reaction time.
 - integrating elements of subjective experiences.
 - discrediting behavioral principles.
- ANS: A DIF: Moderate REF: Computers and the Cognitive Revolution
 OBJ: 1.6 MSC: Understanding
44. Who used the language of computer science to describe human cognition?
- Donald Broadbent
 - Colin Cherry
 - Frederic Bartlett
 - Wilhelm Wundt
- ANS: A DIF: Easy REF: Computers and the Cognitive Revolution
 OBJ: 1.6 MSC: Remembering
45. An information processing approach to understanding cognition does NOT
- propose a sequence of mental operations to explain cognition.
 - use computer models to describe cognitive processes.
 - describe cognition as processing information in stages.
 - rely on behavioral principles to explain specific stimulus-response relationships.
- ANS: D DIF: Moderate REF: Computers and the Cognitive Revolution
 OBJ: 1.6 MSC: Understanding

ESSAY

1. You've just ordered your lunch and are waiting for your food to be delivered when your friend Jill says, "I don't understand why you would need to take a whole class on cognitive psychology. It doesn't seem that important to our everyday lives." Describe to Jill all the ways she will rely on cognitive processing during this meal.

ANS:

Answers will vary.

DIF: Difficult REF: The Scope of Cognitive Psychology
 OBJ: 1.1 MSC: Creating

2. Describe the case of H.M. What does his story tell us about the role that memory plays in our sense of self?

ANS:

Answers will vary.

DIF: Moderate REF: Amnesia and Memory Loss OBJ: 1.2
 MSC: Analyzing

3. Compare and contrast the introspection, behaviorist, and cognitive approaches to studying mental activities. Which approach do you find most compelling, and why?

ANS:

Answers will vary.

DIF: Difficult

REF: The Cognitive Revolution

OBJ: 1.3 | 1.4

MSC: Evaluating

4. Mikey is 4 years old and has begun acting out. Every time he throws a tantrum, his mother rushes over to console him. In analyzing this behavior, what sort of factors would most interest a behaviorist? On what factors would a cognitive psychologist using the transcendental method focus? What conclusions will each psychologist reach?

ANS:

Answers will vary.

DIF: Difficult

REF: The Years of Behaviorism | European Roots of the Cognitive Revolution

OBJ: 1.4 | 1.5

MSC: Applying

5. Despite the fact that we cannot directly observe mental activity, cognitive psychologists are able to scientifically study these processes. Explain why this is possible by describing Kantian logic. Next, provide at least three measurable variables and explain why they could be reliably used as proxies for mental behavior.

ANS:

Answers will vary.

DIF: Moderate

REF: European Roots of the Cognitive Revolution

OBJ: 1.4 | 1.5

MSC: Understanding

6. Describe introspection and then describe two limitations to this method.

ANS:

Answers will vary.

DIF: Moderate

REF: The Limits of Introspection

OBJ: 1.3

MSC: Understanding

7. Define “schema.” Describe how schemas shape and organize our experiences.

ANS:

Answers will vary.

DIF: Moderate

REF: European Roots of the Cognitive Revolution

OBJ: 1.5

MSC: Understanding

8. Cognitive psychologists utilize different methods to understand cognitive processes. Describe three different methods to investigate memory functioning.

ANS:

Answers will vary.

DIF: Moderate

REF: Research in Cognitive Psychology: The Diversity of Methods

OBJ: 1.1

MSC: Understanding