

ANSWERS

Chapter 1: Schools of Thought

1. (A) Cognitive psychology is the study of how we process, store, and retrieve information. Choices (B) and (C) are devoted to studying the way people relate to others and the unique attributes of a person; neither field focuses on one's thought process. (D) deals with long-lasting changes in behavior, usually through experience. (E) is the experience of a meaningful pattern of a stimulus.
2. (C) Abraham Maslow is a humanist. The humanist approach emphasizes that each individual has free will to determine his or her own future. Self-actualization is an inherent tendency to reach our true potential.
3. (D) Wertheimer, along with Wolfgang Kohler and Kurt Koffka, studied the illusion of flashing lights and the perception of movement. Wertheimer argued that perceptual experiences, such as flashing lights, resulted from a "whole pattern" or, in German, "Gestalt."
4. (A) William James wrote the *Principles of Psychology*, published in 1890. This book included the study of the mind, sensation, memory, and reasoning. James is associated with functionalism. Wundt is associated with structuralism. Watson is associated with behaviorism. Freud is associated with psychoanalysis. Wertheimer is associated with Gestalt.
5. (A) John Watson published a paper called "Psychology as a Behaviorist Views It." Watson rejected the notion that introspection can be used as a technique to determine the behavior of human beings. Watson believed psychology needed to be an objective experimental science. Unlike choices (B), (C), (D), and (E), behaviorism was the first field to study psychology in an observable and measurable manner.
6. (D) The definition of the eclectic approach is a combination of techniques and ideas from many different schools of thought in psychology.
7. (D) The psychoanalytic approach focuses on the idea that each of us has an unconscious that contains thoughts, desires, and fears that have been hidden or repressed because they threaten our conscious self. (A), rewards and punishments, is based on behaviorism. (B), self-esteem and self-actualization, is based on humanism.
8. (A) In Pavlov's experiment in which he rang a bell before putting food in the dogs' mouths, the dogs eventually paired the bell with salivating, even when the food was not present. This phenomenon, which Pavlov called conditioned reflex, eventually became known as classical conditioning. Because this theory was based on involuntary reflexes and many psychologists believe human behavior is based on voluntary choices, they criticized classical conditioning, claiming it could not help us further understand human behavior. This explanation negates choice (C). (D) and (E) are irrelevant to this question.

9. (B) Wilhelm Wundt established the first psychological laboratory in 1879. Structuralism is the study of the most basic elements in our conscious minds. John Watson was a behaviorist. William James studied functionalism. Max Wertheimer studied Gestalt. Sigmund Freud studied psychoanalysis.

10. (B) The behavioral approach analyzes how organisms learn or modify behavior based on rewards and punishments in the environment. The other choices do not specifically focus on reinforcements in one's environment.

11. (D) The behavioral approach emphasizes the objective, scientific analysis of observable behavior. This includes conditioning human behavior. Choice (A) focuses on an individual's thought process or perception. Choices (B) and (C) were both schools of thought that focused on introspection. Psychoanalysis emphasized the strength of the unconscious.

12. (B) Wilhelm Wundt is considered the father of psychology. Wundt established the first psychological laboratory in 1879.

13. (C) Structuralism was influenced by the physical scientists of the time. Wundt emphasized that all complex substances could be separated into component elements, whereas functionalists examined behaviors from a different point of view. Functionalists were asking what the mind does and why. Choice (C) best exemplifies these concepts. (A) is too vague and inaccurate to be the correct answer. (B) does not represent either structuralism or functionalism. (D) is incorrect because both structuralism and functionalism used introspection as a means of determining human behavior. Once again, choice (E) is not using accurate information to define either structuralism or functionalism.

14. (E) The basis of humanism is the understanding that individuals have free will and a large capacity for reaching their potential. It is the human experience that we all share that enables individuals to attain such goals. Cognitive psychology is incorrect because it focuses on the process of thinking, perception, and attention to details of language and problem solving. Cognition does not emphasize the human experience. Structuralism focuses on complex mental elements. Behaviorism is based on relationships, stimulus-response, and rewards and punishments. Functionalists examined mental processes, not human experience.

15. (A) Psychoanalysis stresses the importance of the patient and psychologist working together to explore the client's past. Humanism emphasizes one's present and future, not one's past. Cognitive psychology works on changing the client's way of thinking, again not placing much emphasis on the past. Eclectic simply means using several different approaches of psychology. Behavioral psychology tries to identify negative behaviors and eliminate them through such means as systematic desensitization.

16. (D) Psychodynamic psychology stresses the influence of the unconscious. Its fears, impulses, and desires motivate our conscious behavior. Choice (A), free will and self-actualization, refers to humanism. (B) refers to experimental psychology. (C) refers to part of Carl Jung's theory of personality development.

17. (B) Developmental psychologists study a person's biological, emotional, cognitive, and social development across the life span. Choice (A) is too vague to be the correct answer. (C) is incorrect because mental process refers to cognitive psychology, not developmental psychology. (D) and (E) are incorrect because they do not answer the question.

18. (A) Choice (A) is the definition of phenomenology, the study of natural, unanalyzed perception.

19. (C) Biological psychologists focus on the ways changes in an organism's physical makeup can affect behavior, relating directly to genetics and the nervous system. Choices (A), (B), and (D) are incorrect because biological psychologists do not study the mind or life experiences. Choice (E) may appear to be correct, but the question is asking what the term *biological psychology* refers to, which is not drug treatment.

20. (A) Choice (A) is the definition for a case study. Choice (B) defines a longitudinal study. Choice (E) defines a cross-sectional study. Choices (C) and (D) do not define any type of study.

Chapter 2: Research Methods

21. (D) A correlation expresses a relationship between two variables without ascribing cause. Correlational research employs statistical methods to examine a relationship between two or more variables, but does not permit researchers to draw conclusions. Unlike correlational research, experimental research offers the opportunity to draw conclusions because of the strict control of variables.

22. (A) A random sample is defined as a sample in which each potential participant has an equal chance of selection. Choice (B) defines *representative sample*. Choice (C) defines the term *sample*, not *random sample*. Choices (D) and (E) do not accurately define *random sample*.

23. (C) While researchers were testing the hypothesis that better lighting would boost worker output in an electric plant in the 1920s, they were surprised to see their results showed something else entirely. Productivity increased regardless of lighting merely because of the researcher's attention and not factory conditions. Choice (A) is incorrect because the Hawthorne effect focuses on the researcher's attention, not expectations. Choice (B) refers to the researcher's bias and change of behavior, not the subject's.

24. (E) A confounding variable is anything that differs between the control group and the experimental group besides the independent variable. How fast and hungry the mice are at the beginning of the experiment are potential confounding variables. When and where the race takes place are also possible confounding variables that can potentially change the findings of this experiment. The population from which the mice were selected cannot be a confounding variable. This will not differ for the two groups. All of the mice were chosen from the same larger population. Even if this larger population is flawed, it is not considered a confounding variable.

25. (B) Marc has established a relationship. Marc did not conduct an experiment; therefore, he cannot draw any conclusions. Marc has found a correlation between studying and performance on a final exam; whether or not it is significant would require the use of inferential statistics.
26. (E) Jordan would need to use inferential statistics to determine whether the experimental group's aggression levels were significantly different. Jordan could very well use descriptive statistics, but not before he determines whether his hypothesis has been supported and represents the larger population.
27. (C) Correlational research allows the researcher to determine whether a relationship exists between two variables. A positive correlation means that high scores on one variable tend to be paired with high scores on the other variable. A number between -1 and $+1$ expresses the strength of the correlation. A negative correlation means that high scores on one variable tend to be paired with low scores on the other variable. The number 0 denotes the weakest possible correlation or no correlation at all.
28. (A) A negative correlation is expressed as -1 . This means that as one variable goes up, the other variable will go down. In this case, as the room temperature went up, the student performance went down, indicating a negative correlation.
29. (B) The independent variable in the experiment is the variable that is manipulated to test its effects on the other, dependent variables. In this experiment, the manipulation of the number of alcoholic drinks given to the subjects will affect their levels of aggression. The dependent variable in the experiment is measured to see how it is changed from the manipulation of the independent variable.
30. (C) With experimental research the strict control of variables offers the researcher the opportunity to draw conclusions about cause-and-effect relationships. In this instance, if the researcher wants to establish a causal relationship between eating breakfast and work performance, experimental research must be used. Correlational research does not allow the researcher to draw conclusions. Surveys simply allow the researcher to gather an immense amount of data in a short period of time.

Chapter 3: The Brain

31. (A) The Broca's area is located in the left frontal lobe. It is necessary for combining sounds into words and arranging words into meaningful sentences. Wernicke's area plays a role in understanding speech. The hypothalamus is part of the limbic system and regulates motivational and emotional behavior. The hippocampus is involved in transferring fleeting memories into permanent storage. The medulla is responsible for heart rate and blood pressure.
32. (C) The cerebellum is a region of the hindbrain that is involved in motor control and coordinating movements. Damage to this region would therefore cause loss of muscular coordination.

did not conduct an experiment; therefore, a correlation between studying and performance that is significant would require the use of an experiment.

to determine whether the experiment is significant, Jordan could very well use descriptive statistics. Her hypothesis has been supported and she can conclude that the relationship is significant.

er to determine whether a relationship exists means that high scores on one variable are associated with high scores on the other variable. A number between -1 and $+1$ indicates the strength of the correlation. The number 0 denotes no correlation at all.

This means that as one variable goes up, the other variable also goes up, the student's performance improves.

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al lobe. It is necessary for combining information from different parts of the brain to produce meaningful sentences. Wernicke's area plays a key role in the limbic system and regulates emotions. Broca's area is involved in transferring information from the brain to the mouth. The hypothalamus is responsible for heart rate and blood pressure.

hat is involved in motor control and coordination. Damage to the cerebellum would therefore cause loss of muscular control and coordination.

33. (C) The pons is a bridge that connects the spinal cord to the brain. Cells in the pons manufacture chemicals involved in sleep.

34. (E) The reticular formation arouses and alerts the forebrain and prepares it to receive information from all other senses. Damage to this location can cause permanent unconsciousness. Damage to the temporal lobe can cause speech and language issues. Damage to the frontal lobe can cause motivational and emotional issues. Damage to the parietal lobe can cause sensory motor issues.

35. (C) By measuring electrical impulses, an EEG (electro-encephalogram) can detect epileptic seizures, covert processing, seizure disorders, and sleep disorders.

36. (B) The corpus callosum is a wide band of fibers that connect the left and the right hemispheres of the brain. It has 200 million neural fibers that allow information to pass back and forth between the hemispheres. It was believed that by cutting the corpus callosum, in what was known as a "split-brain" operation, people suffering from epilepsy could decrease the number of seizures they had.

37. (A) The limbic system is a group of about half a dozen interconnected structures in the core of the forebrain that are involved in many motivational behaviors, such as eating, drinking, and sexual desire. Breathing regulations are controlled by the medulla. The cerebellum controls balance and coordination. Various regions in the left hemisphere of the brain control speech and language.

38. (A) The thalamus is often referred to as the "switchboard" of the brain. All sensory information that enters the brain goes through the thalamus. It is the job of the thalamus to relay the information to the appropriate region of the brain.

39. (D) The parietal lobe is located directly behind the frontal lobe. Its functions include processing sensory information from the body parts, which includes touching, locating limb positions, and feeling temperature. The occipital lobe is responsible for processing visual information. The temporal lobe is responsible for processing auditory information. The frontal lobe is responsible for interpreting and performing emotional behavior, behaving normally in social situations, and maintaining a healthy personality.

40. (B) Damage to the Broca's area will result in Broca's aphasia, which means a person cannot speak in fluent sentences but can understand written and spoken words.

41. (B) The occipital lobe is critical for recognizing objects. Damage to this area results in difficulties of recognition, a condition called visual agnosia. In visual agnosia the individual fails to recognize some object, person, or color, yet has the ability to see and describe parts of some visual stimuli.

42. (B) The patient will be able to say she saw the word ART because it was projected to the left hemisphere, which has the ability to control speech. Although the patient's right hemisphere saw the word HE, the right hemisphere turns out to be mute, meaning that it cannot say what it saw. However, the patient can point with her left hand to a photo of HE, indicating the right hemisphere understood the question.

43. (E) The somatosensory cortex is a narrow strip of the cortex that is located at the front edge of the parietal lobe. It processes sensory information about touch, location of limbs, pain, and temperature.
44. (C) The amygdala is involved in forming, recognizing, and remembering emotional experiences, unlike the hippocampus, which is responsible for transferring fleeting memories into permanent storage.
45. (A) An MRI, or magnetic resonance imaging, involves passing nonharmful radio frequencies through the brain. A PET scan, or positron emission tomography, involves injecting slightly radioactive solutions into the bloodstream.
46. (B) The midbrain is involved in visual and auditory reflexes, such as automatically turning your head toward a noise. The hindbrain has three distinct structures: the pons, the medulla, and the cerebellum. The forebrain is responsible for a large number of functions, including learning and memory. The motor cortex is involved in the initiation of all voluntary movements.
47. (E) Choice (E) is the only career that needs some amount of creativity, which is controlled by the right hemisphere. The other choices are all careers that need strong language, logical reasoning, and writing skills. The left hemisphere controls these skills. Damage to the left hemisphere would make those careers difficult.
48. (C) Balance and coordination are controlled by the cerebellum. All of the other choices are controlled by the hypothalamus.
49. (C) The limbic system is a group of structures in the forebrain that are involved in motivational behavior. The four structures that make up the limbic system are the hippocampus, hypothalamus, thalamus, and amygdala.
50. (A) The Wernicke's area is located in the left temporal lobe. This area plays a role in understanding speech.

Chapter 4: Neuroscience

51. (D) The myelin sheath is composed of fatty material that wraps around and insulates an axon. The axon is a single threadlike structure that carries signals away from the cell body. The dendrites are branchlike extensions that arise from the cell body. The synapse is a small space that exists between an end bulb and adjacent cell body. The cell body provides fuel and maintains the neuron.
52. (C) Another name for the cell body is the soma, a relatively large structure that maintains the entire neuron.

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53. (A) If a stimulus is large enough to excite a neuron, two things will happen to the axon. First the stimulus will eventually open the axon's chemical gates by stopping the sodium pump. Second, when the stoppage of the sodium pump causes the gate to open, thousands of positive ions will rush in. The action potential is a tiny electrical current that is generated when positive sodium ions rush into the axon. A resting state is when the axon has a charge, like a battery, with positive ions on the outside and negative ions on the inside.

54. (A) When you step on a sharp object, you seem to feel the pain almost immediately. Neurons send signals at speeds as high as 200 miles per hour. To feel the pain involves several events happening in this order: The stimulus—in this example, stepping on a nail—begins the reaction. Sensors in your skin then pick up the mechanical pressure and transforms it into an electrical impulse. When the impulse reaches the end bulb it releases the neurotransmitter, which is the chemical messenger that transmits information between nerves and body organs. Since the stimulus must come first, choices (B), (C), and (D) can be eliminated. Choice (E) is incorrect because the neurotransmitter has to be released before anything can reach the receptor site.

55. (B) The sodium pump is a transport process that picks up any sodium ions that enter the axon's chemical gates and returns them back outside. Choice (A) is incorrect because when the axon is charged, positive ions are on the outside while negative ions are on the inside. Choices (C) and (D) do not correctly define a sodium pump. Choice (E) is incorrect because the sodium pump is not a neural impulse.

56. (D) The all-or-none law is the principle that the action potential in a neuron does not vary in strength; the neuron either fires at full strength or it does not fire at all. Choice (B) is incorrect because the synapse is the area composed of the axon terminal of one neuron and the dendrite of the next neuron. Choice (C) is incorrect because the resting state is when a neuron is positively charged outside and negatively charged on the inside. Choice (E) is incorrect because the sodium pump is a transport process that picks up sodium ions.

57. (C) Threatening or challenging physical or psychological stimuli triggers the sympathetic nervous system. This increases physiological arousal and prepares the body for action. The sympathetic nervous system prepares the body for "fight or flight." The parasympathetic nervous system helps return the body to equilibrium, also called homeostasis.

58. (B) Alcohol affects the nervous system in a number of ways, blocking neural receptors and stimulating others. Some neurons are excited by the neurotransmitter GABA, which the brain normally manufactures. Alcohol molecules so closely resemble those of GABA neurotransmitters that alcohol can function like GABA and open GABA receptors. Anandamide is involved in memory, motor coordination, and emotions. Dopamine is critical to the way the brain controls movement; there is a direct link to dopamine levels in the body and Parkinson's disease and schizophrenia. Acetylcholine is a major excitatory neurotransmitter. Serotonin influences mood levels in the body.

59. (A) The sympathetic nervous system and parasympathetic nervous system are both subdivisions of the autonomic nervous system. The sympathetic nervous system prepares the body for threatening or challenging situations, which means increased blood pressure and increased heart rate. The parasympathetic nervous system returns the body to a relaxed state, for example, decreased heart rate.

60. (E) Efferent neurons carry information away from the spinal cord to produce responses in various muscles. Afferent neurons carry information from the senses to the spinal cord. Interneurons carry information within the central nervous system.

Chapter 5: Sensation and Perception

61. (A) Sensation is the experience of sensory stimulation. Perception is the process of creating meaningful patterns from the sensory information. Adaptation is the decreasing response of the sense organs upon exposure to a continual stimulation.

62. (C) The minimum intensity of physical energy required to produce any sensation at all in a person is called absolute threshold. The difference threshold, also known as the just-noticeable difference, is the smallest change in stimulation that can be detected 50 percent of the time.

63. (B) Weber's law states that the JND (just-noticeable difference) for any given sense is a proportion of the stimulation being judged. Hearing, for example, is very sensitive: we can detect a 0.3 percent change in sound. By contrast, producing a JND in taste requires a 20 percent change.

64. (E) The transparent protective coating over the front part of the eye is the cornea. The lens focuses the light onto the retina. The iris is the colored part of the eye. The pupil is the small opening in the iris where light enters. The fovea is the area of the retina that is the center of the visual field.

65. (B) The lens is the transparent part of the eye inside the pupil that focuses light onto the retina.

66. (D) The photoreceptors with a conelike shape are called cones. They are primarily located in the center of the retina, called the fovea. The fovea is the correct answer, and not the retina, because the question was looking for the location of the greatest density of cones.

67. (A) An afterimage is a visual sensation that continues after the original stimulus is removed. For example, if you stare at a blue square, you will see a yellow afterimage.

68. (C) On the basis of his work with afterimages, physiologist Ewald Hering suggested that the visual system codes colors by using two complementary pairs: red/green and blue/yellow. Hering's idea became known as the opponent-process theory. The trichromatic theory says there are three different kinds of cones in the retina, not related to an afterimage. The volley principle has to do with receptors in the ear and has no relation to an afterimage.

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69. (B) Trichromats are people who have normal color vision. Trichromats perceive all hues by combining the colors red, blue, and green.

70. (D) The three small bones are called the hammer, anvil, and stirrup, also known as the ossicles.

71. (B) Transduction refers to the process in which a sense organ, in this case the nose, changes or transforms physical energy into electrical signals that become neural impulses, which may be sent to the brain for processing. Choice (A) is incorrect because adaptation refers to a decreased response to a stimulation. Choice (C) is incorrect because sensation is a meaningless bit of information. Choice (D) is incorrect because perception is meaningful sensory experiences.

72. (C) A gymnast relies on both her kinesthetic and her vestibular senses. Her kinesthetic senses are relaying messages pertaining to muscle strain and movements; her vestibular senses are supplying feedback about her body position. Kinesthetic senses are senses of muscle movement, posture, and strain on muscles and joints. Vestibular senses are the senses of equilibrium and body position.

73. (B) Loudness is our subjective experience of a sound's intensity. The brain calculates loudness from specific physical energy, in this case the amplitude of sound waves. Pitch is our subjective experience of a sound being high or low. The frequency of the sound wave is measured in cycles.

74. (D) The olfactory cells are located in two one-inch-square patches of tissue in the uppermost part of the nasal passages.

75. (A) Convergence is a binocular cue for depth perception based on signals sent from muscles that turn the eye. To focus on near or approaching objects, these muscles turn the eyes inward, toward the nose. Retinal disparity refers to the different position of the eyes receiving slightly different images. Shape constancy refers to the tendency to perceive an object as retaining the same shape even when you view it from different angles. Interposition comes into play when objects overlap.

76. (C) Size constancy refers to our tendency to perceive objects as remaining the same size even when their images on the retina are continually growing or shrinking. Choice (A), shape constancy, refers to changing shapes, not necessarily size.

77. (E) Convergence is a binocular cue, meaning the cue depends on the movement of both eyes. Choices (A), (B), (C), and (D) are monocular cues, that is, cues that are produced from a single eye.

78. (C) The cochlea is located in the inner ear. The cochlea contains the receptors for hearing, and its function is transduction, transforming vibrations into nerve impulses that are sent to the brain for processing into auditory information.

79. (B) The gate control theory explains that you may not notice pain from a headache or injury while thoroughly involved in some other activity, because impulses from that activity close the neural gate and block the passage of painful impulses.

80. (D) Rods are photoreceptors that contain a single chemical, called rhodopsin, which is activated by small amounts of light. Because rods are extremely light sensitive, they allow us to see in dim light, but to see only black, white, and shades of gray. Cones are photoreceptors that contain three chemicals called opsins, which are activated in bright light and allow us to see color.

Chapter 6: Consciousness, Sleep, and Dreams

81. (D) Altered states of consciousness result from using any number of procedures, such as meditation, psychoactive drugs, hypnosis, or sleep deprivation. Choices (A), (B), (C), and (E) all differ from normal consciousness. The chief characteristic of these altered states, unlike exercise, is that we perceive our internal and external environments in ways different from normal perception.

82. (A) The automatic process is any activity that requires little awareness, takes minimal attention, and does not interfere with ongoing activities. All of these characteristics describe what sometimes happens while people are driving a familiar route. Choice (B) requires full awareness. Choices (C), (D), and (E) do not pertain to this question.

83. (B) The circadian rhythm refers to a biological clock that is genetically programmed to regulate physiological responses within a time period of 24–25 hours (one day). Most of us operate on a 24-hour day and thus set back our sleep-wake circadian clock about one hour each day. Choice (A), interval timing clock, works more like a stopwatch, which helps a person to time his or her movements, such as knowing when to start or stop an activity. Choice (C), biological clock, is an internal timing device used to regulate various physiological responses, but it is not genetically programmed.

84. (D) Melatonin is a hormone that is secreted by the pineal gland. Melatonin secretion increases with darkness and decreases with light, playing a role in the regulation of circadian rhythms and in promoting sleep. Serotonin is related to mood levels and mood control. Norepinephrine works as a stress hormone and is directly related to “fight or flight.” Epinephrine, when produced by the body, increases heart rate and blood pressure. Dopamine also relates to the sympathetic nervous system, increasing heart rate and blood pressure.

85. (B) Stage 1 sleep is a transition stage from wakefulness to sleep. In this stage a person gradually loses responsiveness to stimuli and experiences drifting thoughts and images. REM sleep, or paradoxical sleep, is marked by physiological arousal and voluntary muscle paralysis. Stage 2 sleep marks the beginning of a deeper sleep. Stages 3 and 4 are characterized by low-frequency waves; stage 4 specifically is considered to be the deepest sleep stage.

86. (A) Stage 4 sleep is also called slow wave, or delta, sleep. It is characterized by waves of very high amplitude and low frequency, called delta waves.

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87. (D) REM sleep is also known as paradoxical sleep. REM brain waves have fast frequency and low amplitude and look very similar to beta waves, which occur when you are wide-awake. During this stage your body is physiologically aroused, but your voluntary muscles are paralyzed. REM sleep stage is highly associated with dreaming.

88. (D) Sleepwalking and sleep talking do occur during stage 4 sleep. Many people confuse this answer with REM stage, because of the belief that sleepwalkers and sleep talkers are acting out their dreams that occur in REM. But voluntary muscles are paralyzed during REM; therefore, people cannot physically act out their dreams. Because stage 4 is the deepest stage of sleep, very often people do not remember sleepwalking or sleep talking.

89. (C) From infancy to adolescence, the total amount of time spent in sleep and the percentage spent in REM gradually decline. Newborns sleep about 17 hours a day, and 50 percent of that time is spent in REM. A four-year-old sleeps about 10 hours, and 25 percent of that time is spent in REM. From adolescence to old age, we maintain the same amount of sleep time, approximately 7.5 hours of sleep, and the same percentage of REM sleep, about 20 percent or less.

90. (B) Choice (B) defines the term *adaptive sleep theory*. Support for the adaptive theory comes from observations that large predatory animals sleep more and wherever they want, while smaller prey sleep less and in more protected areas. Choice (A) defines the term *repair theory*.

91. (C) The activation-synthesis theory of dreams says that dreaming represents the random and meaningless activity of nerve cells in the brain. Choices (A) and (B) represent the Freudian view of dreaming. Choice (E) represents the extension of waking life theory.

92. (A) REM sleep, which stands for “rapid eye movement,” is associated with dreaming. Dream research suggests that about 80–90 percent of the times when subjects are awakened from REM sleep, they report having had a vivid and long dream. Only about 5–10 percent of our dreams occur in stage 4 sleep and are less likely to be remembered.

93. (E) Freud’s view on dreaming was the belief that dreams protect the conscious from the realization of our unconscious desires and wishes, especially sexual or aggressive wishes. Our dreams transform these desires into harmless symbols and do not disturb our sleep. Extension of waking life is based on the belief that our dreams reflect the same thoughts and concerns we have when we are awake. The activation-synthesis theory suggests that dreams are a product of neural firings in our brain. The spiritual world theory states that dreams represent the time when one enters the spiritual world, which helps a person to reflect on the past, present, or future, through communication with the souls of people who are no longer with us.

94. (B) A person with sleep apnea may repeatedly stop breathing, momentarily wake up, resume breathing, and return to sleep. Narcolepsy is marked by excessive sleepiness usually in the form of sleep attacks. Insomnia refers to difficulties in either going to sleep or staying asleep through the night.

95. (A) Night terrors are frightening experiences that often start with screaming, followed by sudden waking in a fearful state with rapid breathing. They usually occur in stage 4 sleep. Night terrors are often confused with nightmares, which usually occur during REM sleep. They are also frightening, but usually produce clear anxiety-producing images.
96. (C) Narcolepsy is a chronic disorder. It is characterized by sleep attacks or short lapses of sleep throughout the day. These attacks are accompanied by REM sleep and muscle paralysis.
97. (B) REM sleep looks very similar to beta waves. Physiologically a person is aroused during this stage and muscles are paralyzed, which is why this stage is known as "paradoxical sleep." Choice (A) is incorrect because REM sleep is not the deepest stage of sleep; stage 4 is. Choice (C) is incorrect because body paralysis occurs during REM; therefore, a person cannot sleepwalk. Choice (D) is incorrect because night terrors occur in stage 4 sleep, not REM. Choice (E) is incorrect because a person's vital signs are actually very aroused in REM.
98. (E) Waking consciousness is a mental state that encompasses all thoughts and perceptions that occur when we are awake. The altered state of consciousness awareness is different from the consciously awake person. Choices (B) and (C) represent states of mind different from the consciously awake person as well.
99. (A) One of the main reasons people daydream is to escape reality. It is usually done without effort or recognition. In choices (C), (D), and (E), a person does recognize he or she is doing something to escape, usually with more effort. Dreaming, on the other hand, occurs without any recognition.
100. (C) Insomnia is difficulty with either falling asleep or staying asleep. Narcolepsy is a disorder characterized by sleep attacks. Sleep apnea is marked by periods of sleep when a person stops breathing.
101. (E) Delta waves are slow waves with a very high amplitude and very low frequency. Delta waves are part of stage 4 sleep, not REM. All of the other choices are definite characteristics of REM sleep.
102. (C) An adult getting approximately seven to eight hours of sleep will go through four to five cycles of sleep. A full cycle begins with stage 1 sleep and ends with REM. The next cycle starts at stage 2 and goes up to stage 3 and 4 and back to REM again. Individuals do not return to stage 1 until around the time they are going to wake up.
103. (B) Each stage is 90 minutes. The first cycle includes stages 1, 2, 3, 4, and REM. The next cycle begins with stage 2.
104. (A) Many psychologists in the 1950s believed that if people were denied REM sleep and therefore could not dream, they would suffer mentally and emotionally. Studies today continue to show long-term detrimental behavioral problems when people do not get enough REM sleep. This is not the case with the other stages of sleep.

105. (C) Alpha waves are characteristic of this period before entering sleep. Delta waves are characteristic of stage 4 sleep. Beta waves are characteristics of REM sleep. Theta waves are characteristic of stage 1 sleep.

106. (D) The reticular formation arouses and alerts the forebrain. It is stimulated in sleeping animals. Choices (A) and (B) have to do with memory and emotion. Choice (E) has to do with breathing and heart rate.

107. (B) Extension of waking life theory suggests that dreams reflect our thoughts and concerns from our waking lives, or issues we have on our minds when we are awake. Freud's theory suggests our dreams represent our repressed desires and fantasies. Activation synthesis suggests dreams are a product of our neural firings in the brain. Spiritual world theory suggests when we dream we are in touch with those who have passed on.

108. (E) As an adult, 80 percent of our sleep is in NREM. In other words, adults spend 20 percent of their sleep in REM sleep.

109. (A) Beta waves are characteristic of REM sleep. REM sleep is where 90 percent of our dreaming occurs; therefore, beta waves are characteristic of a person who is dreaming.

110. (A) REM rebound is the idea that we go straight to REM sleep when we are sleep deprived.

Chapter 7: Drugs and Hypnosis

111. (A) Ernest Hilgard developed the hidden observer concept. The idea was that under a hypnotic trance a person's conscious is actually divided into two parts. The hypnotized part will feel little or no pain and will respond that way orally. The un hypnotized part will feel normal pain sensations but will not answer the question orally. This part can respond to the question by tapping one's fingers.

112. (D) Morphine, cocaine, and heroin are all highly physically addictive drugs, causing a person abusing these drugs to feel an overwhelming and compulsive desire to obtain and abuse the drug. Even after stopping, the person has a great tendency to relapse and begin using the drug again.

113. (C) The definition for dependency is a change in the nervous system that results in a person's needing the drug to prevent painful withdrawal symptoms. Choice (A) defines tolerance. Choice (B) defines addiction. Choice (D) defines withdrawal symptoms.

114. (B) When excited, neurons secrete neurotransmitters. After a brief period of time, the neurotransmitters are reabsorbed back into the neuron. This process is called reuptake. If reuptake did not occur, the neurotransmitter would remain in the synapse and neurons would be continually stimulated. Cocaine blocks reuptake, which leads to increased neural stimulation, causing increased physical and psychological arousal.

115. (E) Stimulants, by definition, increase activities of the central nervous system. This results in heightened alertness, arousal, and euphoria. Cocaine, caffeine, nicotine, and amphetamines are all stimulants. Heroin is an opiate, which is highly addictive and used for pain reduction.

116. (D) Tolerance occurs after a person uses a drug repeatedly over a period of time. The drug no longer produces the desired effects. Withdrawal is the painful symptoms that occur when a person is no longer taking an addictive drug. Addiction is the behavioral pattern marked by a compulsive desire for the drug.

117. (C) Cravings for heroin, unlike other drugs, become very intense very quickly. During detoxification, a person can suffer from vomiting, nausea, diarrhea, and chills. This is part of the reason why heroin is such a powerful drug. Although the other choices are also highly addictive drugs, heroin has such severe withdrawal symptoms that it is much harder to stop.

118. (A) Hallucinogens are a separate category from stimulants, eliminating choices (B) and (E). Choice (C) describes some characteristics of opiates. Hallucinogens are not depressants, thereby eliminating choice (D).

119. (A) The most important part of hypnosis is suggestibility. This eliminates choices (B), (C), and (E). Choice (D) is incorrect because hypnotists do not tell people they are going to enter a trance; instead their suggestions are much more subtle. Some examples would be a suggestion of feeling relaxed, feeling sleepy, or having a floating feeling.

120. (D) Compared to adults, young children, especially between the ages of 8 and 12, are more susceptible to hypnosis. At this particular age range, children are often taught to listen to authority figures. They also use their imaginations more often and are more likely to believe due to the fact that they are less jaded than many adults.

121. (A) LSD, unlike the other choices, is a hallucinogen. One of the symptoms listed is hallucinations, therefore eliminating the other drugs. Cocaine and methamphetamines are stimulants. Barbiturates are depressants. Heroin is an opiate.

122. (C) Barbiturates are "downers," which means they slow down or depress the central nervous system, while amphetamines are often referred to as "uppers," which means they stimulate the central nervous system.

123. (B) This question is asking, in pretty general terms, the four major effects of psychoactive drugs. Appetite, sex drive, and digestion are too specific and therefore eliminate choices (A), (C), (D), and (E). Choice (B) gives the overall impacts of any psychoactive drugs.

124. (D) Heroin is an opiate. Opiates are generally used as painkillers. They do increase feelings of euphoria and are highly addictive. The other choices are all examples of depressants. Depressants slow down the central nervous system, decreasing anxiety and increasing relaxation.

125. (B) Marijuana is a hallucinogen, causing psychological effects. Marijuana is believed to act sometimes as a depressant because of its physiological effects, including relaxed inhibitions and feelings of euphoria. Choices (A), (C), (D), and (E) do not cause all of the symptoms listed in the question.

126. (E) Hypnosis is most commonly used to ease pain, stop unhealthy habits, and help patients recall memories. Hypnosis is not used for marriage counseling.

127. (E) Anton Mesmer believed a force called “animal magnetism” could pass into a patient’s body, curing a variety of symptoms. The term *mesmerized*, meaning “spellbound or hypnotized,” comes from Anton Mesmer.

128. (C) The key term in this question is *susceptible*. If a person is susceptible to hypnosis it means he or she has more than likely entered into a hypnotic trance. While under a trance, a hypnotist will suggest that the person does not feel pain. Someone who does not believe in, or has not entered into a hypnotic trance, will probably not report lower levels of pain.

129. (E) Posthypnotic exhortation is a made-up term. Posthypnotic amnesia is not remembering what happened during hypnosis. Hidden observer is the belief that your consciousness is divided into two parts while under a trance. Suggestibility is what allows people under hypnosis to perform a certain behavior. Hypnotic analgesia is the inability to feel pain while still conscious.

130. (E) Heroin is an opiate. Opiates produce withdrawal symptoms, and they are very addictive. Marijuana is not an opiate. Opiates are both physiologically and psychologically addictive.

Chapter 8: Classical Conditioning

131. (A) The UCS, unconditioned stimulus, is a stimulus that automatically causes an organism to respond in a specific way. In this case the substance automatically makes the coyotes ill. The CS, or conditioned stimulus, is an originally neutral stimulus that is paired with an unconditioned stimulus and eventually produces the desired responses in an organism. In this case the sheep’s wool was originally neutral and is now associated with the substance. The CR, or conditioned response, is the response an organism produces when only a conditioned stimulus is present. In this case the conditioned response is the aversion to the sheep, which occurred after conditioning made an association between the substance and the sheep.

132. (C) Generalization is the tendency for a stimulus that is similar to the original conditioned stimulus to elicit a response that is similar to the conditioned response. In this situation, the coyotes showed the same aversion response to the nearby sheep as they did to the original flock of sheep.

133. (D) This is a straightforward definition question. Choice (D) clearly defines the Premack Principle.

134. (A) *Variable interval* means an unspecified amount of time. Pop quizzes are given after an unspecified amount of time. Choice (B) is incorrect because *ratio* means a specific number of times someone has to do something in order to be rewarded. In terms of pop quizzes a student cannot do anything to make a pop quiz happen any sooner or later; it is simply an interval of time. *Fixed ratio* means a person has to do something a certain number of specified times to be rewarded, for example, getting paid on commission. *Fixed interval* is a set amount of time between reinforcement, for example, a midterm exam.

135. (B) Extinction is the reduction in a response when the conditioned stimulus is no longer followed by the unconditioned stimulus. As a result, the conditioned stimulus tends to no longer elicit the conditioned response. In this case if the bell is no longer paired with the food, eventually the dogs will stop salivating at the sound of the bell.

136. (D) The unconditioned stimulus is some stimulus that triggers or elicits a physiological reflex, such as fear. In this case Little Albert automatically had a fear response after hearing the loud noise, which makes it the unconditioned stimulus.

137. (A) Because a stimulus must produce a response and not the other way around, choices (B), (C), and (E) can all be eliminated. Choice (D) is incorrect because a conditioned stimulus must produce a conditioned response. Conditioned stimulus means that the stimulus was formerly neutral; therefore, the response is elicited from the conditioned stimulus and called the conditioned response. That leaves choice (A). The UCS produces the UCR.

138. (B) The sailor's hat was a formerly neutral stimulus. Now Dylan has made an association between the sailor's hat and feeling nauseated. The sailor's hat is therefore the conditioned stimulus.

139. (D) Variable ratio is correct because when fishing, a person does not know when or how long it is going to take to catch a fish. Variable interval is incorrect because *interval* simply means "time." Although fishing does take time, you have to do something to catch a fish, such as putting the fishing rod in the water.

140. (C) *Fixed ratio* applies to any job that works on commission. *Ratio* means the number of times you do something to get rewarded. *Fixed* means a set number of times you do something to get rewarded. When people work on commission they know how much merchandise they have to sell in order to get paid.

141. (A) The UCS is a stimulus that triggers or elicits a physiological reflex. In this case, it is the job interview, because it automatically made him nervous. The UCR is unlearned and innate. In this case feeling anxious is a direct, involuntary response to the job interview. The CS is a formerly neutral stimulus. In this case prior to the job interview, the passenger was never afraid to fly. The CR is elicited from the CS; in this case, feeling anxious and nervous about flying would be the CR.

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142. (B) Prior to the injection of the drug that weakens mice's immune system, the saccharine-flavored water had no effect. Once paired with the injection, the saccharine-flavored water had the same effect.

143. (D) The unconditioned response for this advertisement is the desire to buy the car after looking at attractive women with the cars long enough that the mere sight of the car (CS) will elicit a response to buy the car.

144. (B) Because the unconditioned stimulus is a stimulus that elicits an involuntary response, the advertisers intentionally placed attractive women in their ads knowing that that would elicit a desire to buy a car.

145. (C) Choice (C) is the definition of classical conditioning. The other choices do not include the formerly neutral stimulus, which is what classical conditioning is all about.

146. (A) Until paired with the food, the bell did not elicit a response of salivation. Therefore, the bell is the CS. The food automatically made the dogs salivate; therefore, it is the UCS.

147. (E) Choice (E) is the definition of desensitization therapy. Choice (D) sounds like it could also be the correct choice, but desensitization therapy does not use the concept of generalization.

148. (C) Because classical conditioning has to do with a stimulus and response, choice (C) has to be the correct answer. Choice (A) has to do with operant conditioning. Choices (B), (D), and (E) all have to do with social cognitive learning.

149. (D) Choice (D) is the only one that has to do with learned behavior. Choices (A) and (B) are both related to natural physiological occurrences in the body. Choices (C) and (E) are both related to innate behavior.

150. (B) Choice (B) uses the term *unconditioned association*, which is directly related to classical conditioning. The other choices do not specifically discuss a stimulus and a response.

Chapter 9: Operant Conditioning and Cognitive Learning

151. (A) Operant conditioning is a kind of learning in which a behavior is performed, followed by a consequence. Learning takes place as a result of some voluntary action by the learner. In classical conditioning, learning takes place without choice. The stimulus causes the response. Choice (B) is incorrect because it is actually the opposite. Operant conditioning takes place after the response, while classical conditioning takes place before the response. Choice (C) is also the opposite. Classical conditioning is learning by association, and operant conditioning is learning by reinforcement. Choices (D) and (E) are completely incorrect. Classical conditioning is not part of social cognitive learning.

152. (C) Very often students get confused between negative reinforcement and punishment. Negative reinforcement occurs when something unpleasant is taken away if the subject does something. It is conditional. Punishment is not the same as negative reinforcement. It is an attempt to weaken a response, or a behavior, by following it with something unpleasant. It is not conditional. Because the basketball player should not commit flagrant fouls, he was suspended; therefore, it is a punishment.

153. (B) In this scenario the defendant is harassed until he confesses. The harassment is something unpleasant and it will be taken away once the confession is given, making it negative reinforcement and not punishment.

154. (C) Remember, punishment is an attempt to stop an unwanted behavior. It is not contingent upon a person doing the correct behavior.

155. (D) The law of effect says that if a random act is followed by a pleasurable consequence, such actions are strengthened and will likely occur again. Choice (D) is the definition of the law of effect.

156. (E) Shaping is a procedure in which the experimenter successively reinforces behaviors that lead up to the desired behavior. Many students get confused between shaping and chaining. Chaining is an instructional procedure that involves reinforcing responses in a sequence to form a more complex behavior. In terms of the Skinner box, B. F. Skinner used shaping to condition his rats to press the lever.

157. (B) Variable interval refers to an unknown amount of time, more or less waiting for a desired response to occur. Because it does not matter how many times you pick up the phone to call your friend, the correct answer is variable interval and not variable ratio. Ratio refers to the number of desired acts required before reinforcement will occur.

158. (D) Once the mother takes an aspirin, the unpleasantness of the headache will go away. Choices (A), (B), (C), and (E) are all examples of punishment.

159. (A) Because operant conditioning is learning by reinforcement, which takes place after the response, choice (A) has to be the correct answer. None of the other choices have anything to do with the principles of operant conditioning.

160. (B) Positive reinforcement occurs when something the subject wants is added to encourage the wanted behavior to continue. Negative reinforcement occurs when something unpleasant is taken away once the wanted behavior continues. Both have the same goal, to repeat wanted behavior.

161. (B) Choice (B) is the definition of latent learning. Often humans and animals need motivation or good reason to show their behavior, which does not mean they have not learned the behavior. Choice (A) can apply to almost any form of learning. Choice (D) defines operant conditioning. Choice (E) can sound similar, but latent learning does not say the actual learning occurs after the behavior, just the demonstration of the learning.

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162. (C) Edward Tolman's theory of latent learning suggested that the concept of response needed to include a range of behaviors that would allow learners to reach their goals. Tolman felt that learning usually occurs before the goal is reached.

163. (D) A cognitive map is a learned mental image of a spatial environment. This image is usually learned without the learner realizing he or she has learned it. Choice (D) is the only answer that suggests this.

164. (A) Insight is learning that occurs rapidly based on understanding all the elements of a problem. In this case, the chimps learned how to obtain the banana shortly after figuring out their environment.

165. (E) A learning set is the ability to become increasingly more effective in solving problems the more practice you have. In this case the monkeys learned how to choose the correct box based on their problem-solving techniques used with each trial. Based on this idea, *learning sets* really means learning how to learn.

166. (B) Social cognitive learning emphasizes the ability to learn by observation without firsthand experience. It does not specify that a person must observe rewarded behavior. Choice (D) can be confused for the correct answer, but it is too vague when the question is asking which statement best exemplifies social cognitive learning.

167. (A) In the Albert Bandura "bobo" doll experiment, the children who watched the video in which a person was rewarded for acting violently toward the doll were first to act aggressively. Although after being offered candy by the experimenter, children from all of the groups did demonstrate aggressive behavior, initially it was the model-reward condition.

168. (C) Vicarious learning, or observational learning, is simply learning by observing other people, as Devyn did in this scenario.

169. (E) Albert Bandura is the most prominent proponent of social cognitive learning, which emphasizes learning through observation. Tolman studied latent learning. Kohler studied insight learning. B. F. Skinner studied operant conditioning. Watson studied classical conditioning.

170. (D) Choice (D) is the only behavior that is innate. Although toddlers do get positive reinforcement when they begin to walk, it would happen with or without the reinforcement.

171. (E) The Premack Principle states that more probable behaviors will reinforce less probable behaviors. In this case it is that Joey will respond with correct behavior when using trains. Applying this reinforcement to get him to complete his homework could work, according to this principle.

172. (B) Insight learning occurs rapidly as a result of understanding all of the elements of a problem. In this case, Spencer suddenly arrived at the answer after working out the elements of the math problem. Choice (A) refers to learning that is not immediately reflected in the behavior. Choice (C) is simply learning how to learn. Choice (D) is vague and incorrect. Choice (E) is learning based on reward and punishment.

173. (D) Learned helplessness is defined as failure to take steps to avoid or escape from an aversive stimulus that occurs as a result of previous unavoidable painful stimuli. The dogs, having no way out for several minutes, gave up, even when there was a viable escape.

174. (B) Spontaneous recovery is the reappearance of an extinguished response after some time has passed. In this case, Jada's fear of going to the dentist returned only when she had to go back for a root canal. That is an example of spontaneous recovery. Generalization would have been if Jada feared all doctors as a result of her fear of the dentist.

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