Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank

SKU: 9781319107383-TEST-BANK

Name:_____ Class:_____ Date:_____

Chapter 02: Multiple Choice

1. Four people failed a difficult exam and are trying to forget about the experience. Which person will be LEAST successful?
   a. Nancy, who has been staying awake for the past three nights
   b. Caleb, who keeps thinking about how important this test was
   c. Riley, who has taken up meditation
   d. Chantel, who enjoys listening to music, watching TV, and talking to her friends all at once

ANSWER: c

2. Which is NOT a way to forget faster?
   a. don't get enough sleep
   b. multitask while studying
   c. deprive your senses
   d. care more

ANSWER: d

3. Early learning and memory researchers focused on behavior, rather than brain function, because:
   a. they did not think the brain was involved in learning and memory.
   b. they were not interested in how the brain was involved in learning and memory.
   c. technology wasn't yet available for studying the complexities of the brain.
   d. none of them knew how to study physiology.

ANSWER: c

4. The nervous system is:
   a. mainly involved in cooling the blood.
   b. considered the seat of learning and memory.
   c. a relatively simple anatomical system.
   d. devoted to the distribution and processing of information.

ANSWER: d

5. The central nervous system is made up of:
   a. nerves and muscles.
   b. sensory organs.
   c. sensory and motor neurons.
   d. the brain and the spinal cord.

ANSWER: d

6. If a friend pats you on the back, the neurons that carry the information from the touch receptors on your back to your brain are part of the:
   a. central nervous system.
   b. peripheral nervous system.
   c. left hemisphere.

Copyright Macmillan Learning. Powered by Cognero.

Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank

Chapter 02: Multiple Choice

d. right hemisphere.

ANSWER: b

7. When Harley reaches to catch a basketball, the neurons that carry the message from Harley's brain to the muscles in Harley's arms and hands are part of his:

a. central nervous system.
b. peripheral nervous system.
c. left hemisphere.
d. right hemisphere.

ANSWER: b

8. In vertebrates, the nervous system is divided into the:

a. brain and neurons.
b. parietal lobe and occipital lobe.
c. central nervous system and peripheral nervous system.
d. cerebellum and brainstem.

ANSWER: c

9. Which is NOT part of the peripheral nervous system in vertebrates?

a. sensory organs
b. spinal cord
c. muscles
d. body organs

ANSWER: b

10. The LARGEST structure of the human brain is the:

a. cerebral cortex.
b. frontal lobe.
c. cerebellum.
d. temporal lobe.

ANSWER: a

11. If Sarah falls and injures the back of her head, she is MOST likely to experience difficulty:

a. understanding speech.
b. seeing a friend's face.
c. remembering names.
d. feeling the difference between silk and sandpaper.

ANSWER: b

12. The part of cerebral cortex that is important for processing visual elements is the:

a. occipital lobe.

Copyright Macmillan Learning. Powered by Cognero.

Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank

Chapter 02: Multiple Choice

b. parietal lobe.
c. brainstem.
d. frontal lobe.

ANSWER: a

13. The part of cerebral cortex that is important for processing auditory information is the _____ lobe.
a. occipital
b. parietal
c. temporal
d. frontal

ANSWER: c

14. While sitting at a baseball game, Ed feels something crawling up his leg. He is able to realize it before he gets stung. Which part of the cerebral cortex is responsible for this realization?
a. temporal lobe
b. parietal lobe
c. brainstem
d. frontal lobe

ANSWER: b

15. Gina is having trouble hearing her friends when they speak to her. Which lobe of her brain might be damaged?
a. frontal
b. parietal
c. temporal
d. occipital

ANSWER: c

16. Uma has problems planning and remembering recent events. Which lobe of her brain might be damaged?
a. frontal
b. parietal
c. temporal
d. occipital

ANSWER: a

17. The structure that sits at the base of the brain is known as the:
a. cerebral cortex.
b. parietal lobe.
c. brainstem.
d. frontal lobe.

ANSWER: c

Copyright Macmillan Learning. Powered by Cognero.

Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank

Chapter 02: Multiple Choice

18. Which brain structure is involved in helping one learn the coordinated movements necessary for learning to ride a bike?
    a. temporal lobe
    b. brainstem
    c. thalamus
    d. cerebellum

ANSWER: d

19. Which part of the brain helps regulate automatic functions such as breathing?
    a. cerebellum
    b. brainstem
    c. hippocampus
    d. temporal lobe

ANSWER: b

20. Which brain structure receives sensory information from the peripheral nervous system and relays this information to other parts of the brain?
    a. thalamus
    b. basal ganglia
    c. amygdala
    d. he hippocampus

ANSWER: a

21. Which brain structure is especially important for remembering one's eighth birthday party?
    a. thalamus
    b. basal ganglia
    c. amygdala
    d. hippocampus

ANSWER: d

22. Remembering what information would be MOST likely to involve the amygdala?
    a. the details of one's first date
    b. how one felt when graduating from high school
    c. how to perform an intricate sequence of gymnastic moves
    d. the definition of new terms in a psychology class

ANSWER: b

23. What is the study of determining personality or intelligence from measuring head shape and size?
    a. phrenology
    b. comparative neuroanatomy

Copyright Macmillan Learning. Powered by Cognero.

Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank

Chapter 02: Multiple Choice

c. neuropsychology
d. structural neuroimaging

ANSWER: a

24. Phrenology was a systematic study of the brain that was pursued by:
a. Galen.
b. Aristotle.
c. Paul Broca.
d. Franz Joseph Gall.

ANSWER: d

25. Imagine a parent who has two children. The first child has a very large forehead, and the second child's head is very large at the back. According to the system of phrenology, the first child would excel at _____ and the second would excel at _____.
a. planning and performing actions; remembering
b. remembering; seeing the world
c. seeing the world; planning and performing actions
d. planning and performing actions; seeing the world

ANSWER: d

26. Which statement is TRUE?
a. The main problem with phrenology is that bumps on the skull are caused by bulges in underlying brain tissue.
b. Structural neuroimaging can show details of brain tissue and brain lesions, but cannot provide us with information on function.
c. MRIs use changes in magnetic fields to create images of the brain's structures.
d. DTIs are a type of MRI that measure how the shapes of different brain regions change over time.

ANSWER: c

27. Which is NOT a use for structural neuroimaging?
a. structure of the brain and brain lesions
b. changes in the brain over time
c. functioning of the brain during imaging
d. changes in brain function that occur with learning

ANSWER: c

28. The study of the relationship between the size and shape of different parts of people's skulls and their personalities and abilities is called:
a. equipotentiality.
b. comparative brain anatomy.
c. phrenology.
d. neuropsychology.

Copyright Macmillan Learning. Powered by Cognero.

Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank

Chapter 02: Multiple Choice

ANSWER: c

29. Which neuroimaging technique uses changes in magnetic fields to generate images of internal brain structure?
    a. single-cell recording
    b. lesions
    c. computed tomography (CT)
    d. magnetic resonance imaging (MRI)

ANSWER: d

30. Which brain imaging method is especially useful for studying the connections between brain regions?
    a. diffusion tensor imaging (DTI)
    b. magnetic resonance imaging (MRI)
    c. computed tomography (CT)
    d. positron emission tomography (PET)

ANSWER: a

31. Which imaging method is particularly useful for physicians trying to assess brain injury, as well as diseases such as multiple sclerosis that specifically target axons or neural connections?
    a. magnetic resonance imaging (MRI)
    b. diffusion tensor imaging (DTI)
    c. computed tomography (CT)
    d. positron emission tomography (PET)

ANSWER: a

32. A doctor is concerned that Martha has dysfunction involving the axons or neural connections of her brain. Which neuroimaging technique would BEST be able to detect this problem?
    a. positron emission tomography (PET)
    b. diffusion tensor imaging (DTI)
    c. computed tomography (CT) scan
    d. magnetic resonance imaging (MRI)

ANSWER: b

33. What is the usual function of dendrites?
    a. receiving signals from other neurons
    b. transmitting information to other neurons
    c. transferring oxygen from the blood to neurons
    d. wrapping neurons in myelin

ANSWER: a

34. Which part(s) of a neuron transmit(s) information to other neurons?
    a. dendrites

Copyright Macmillan Learning. Powered by Cognero.

Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank

Chapter 02: Multiple Choice

b. cell body
c. axon
d. glia

ANSWER: c

35. Which statement is TRUE?
a. There are more neurons than glia in the brain.
b. Neurons are all the same shape and size.
c. Some neurons have no axons.
d. Glia are not necessary for normal brain functioning.

ANSWER: c

36. What is the other name for the cell body of a neuron?
a. synapse
b. soma
c. axon
d. dendrite

ANSWER: b

37. Which cells provide functional and structural support to neurons?
a. pyramidal cells
b. stellate cells
c. interneurons
d. glia

ANSWER: d

38. Multiple sclerosis is a disease in which _____, which interferes with neural function, leading to jerky muscle movements and impaired coordination, as well as problems with vision and speech.
a. the glia are missing
b. interneurons are not able to connect two or more neurons
c. the myelin coating of axons degenerates
d. dendrites are unable to receive signals

ANSWER: c

39. Axons are wrapped in _____, a fatty substance that insulates the electrical signals transmitted by neurons.
a. glia
b. soma
c. stellate
d. myelin

ANSWER: d

Copyright Macmillan Learning. Powered by Cognero.

Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank

Chapter 02: Multiple Choice

40. Imprinting involves all EXCEPT:
    a. classical conditioning.
    b. learning reflexes.
    c. recognition memory.
    d. perceptual learning.

ANSWER: b

41. Rats raised in an enriched environment experience _____ control groups.
    a. cortical neurons with fewer and shorter dendrites than
    b. the same neural development as
    c. better maze learning than
    d. similar structural neural changes as

ANSWER: c

42. The idea that "neurons that fire together, wire together" was proposed by:
    a. Santiago Ramón y Cajal.
    b. Camillo Golgi.
    c. Donald Hebb.
    d. Ivan Pavlov.

ANSWER: c

43. If one puts a hand on a hot stove, one will automatically pull it away before realizing what has been done. This is an example of a(n) _____ behavior.
    a. reflexive
    b. voluntary
    c. learned
    d. intentional

ANSWER: a

44. Which is an example of a reflexive behavior?
    a. Pavlov's dog salivating in response to a sound that has predicted food
    b. a dog that has learned to sit to obtain a treat
    c. a newborn sucking when encountering a nipple
    d. a rat pressing a bar to obtain a drink of water

ANSWER: c

45. According to the Bell–Magendie law of neural specialization:
    a. reflexes are caused by spirits flowing from the brain into the muscles.
    b. the brain plays a major role in reflexes like the "knee-jerk" response to a doctor's rubber mallet.
    c. the spinal cord has one nerve system for sensing and another nerve system for responding.
    d. spinal reflexes can be combined into complex sequences of movements that are the basis of all

Copyright Macmillan Learning. Powered by Cognero.

Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank

Chapter 02: Multiple Choice

behavior.

ANSWER: c

46. The Bell–Magendie law:
    a. applies to the brainstem but not to the spinal cord.
    b. proposes one nerve system for sensing and another for responding.
    c. applies to the central nervous system but not to the peripheral nervous system.
    d. proposes that the brain is divided into two hemispheres.

ANSWER: b

47. What would occur if the sensory fibers in one's arm were cut?
    a. One would still automatically jerk one's hand away from a hot stove.
    b. One would have a limited range of motion in one's arm.
    c. One would not be able to move one's arm at all.
    d. One would not be able to feel a sharp poke on one's arm.

ANSWER: d

48. Many basic reflexes:
    a. do not require the brain's involvement.
    b. use only the sensory neurons.
    c. involve the pumping of spirits or fluids into the muscles.
    d. end with input to the sensory neurons.

ANSWER: a

49. Incoming sensory information is passed from the thalamus to the:
    a. spinal cord.
    b. muscles.
    c. primary motor cortex.
    d. primary sensory cortices.

ANSWER: d

50. Most sensory information enters the brain through the:
    a. thalamus.
    b. occipital lobe.
    c. primary motor cortex.
    d. primary sensory cortices.

ANSWER: a

51. The primary sensory cortices:
    a. process the sensory outputs that control movements.
    b. are responsible for processing the more complex characteristics of stimuli.

Copyright Macmillan Learning. Powered by Cognero.

Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank

Chapter 02: Multiple Choice

c. are specialized for processing particular sensory stimuli.
d. send most of their sensory output to the peripheral nervous system.

ANSWER: c

52. When one opens a door, which part of the brain is responsible for sending signals to the arm muscles, causing one to open the door?
a. V1 (visual cortex)
b. frontal cortex
c. M1 (motor cortex)
d. basal ganglia and cerebellum

ANSWER: c

53. The primary motor cortex is located in the _____ lobe.
a. frontal
b. parietal
c. occipital
d. temporal

ANSWER: a

54. The motor cortex (M1) sends its output signals to the:
a. frontal lobes.
b. basal ganglia.
c. cerebellum.
d. brainstem.

ANSWER: d

55. Which part of the brain is involved in the high-level planning of the movements involved in picking up and using a cell phone to send a text message?
a. frontal lobes
b. basal ganglia
c. cerebellum
d. brainstem

ANSWER: a

56. Which parts of the brain help translate high-level plans into concrete sets of movements?
a. frontal lobes and temporal lobe
b. basal ganglia and cerebellum
c. cerebral cortex and brainstem
d. primary motor cortex and primary somatosensory cortex

ANSWER: b

Copyright Macmillan Learning. Powered by Cognero.

Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank

Chapter 02: Multiple Choice

57. If a pot of water is hotter than expected, it could produce a withdrawal response of the hand. This response was studied by Charles Sherrington and is known as a(n):
    a. peripheral response.
    b. autonomic response.
    c. reflex arc.
    d. neural response.

ANSWER: c

58. The basic idea behind functional neuroimaging is that:
    a. researchers can learn about brain structures by removing them and observing any changes in behavior.
    b. brain structures change color when they are active.
    c. structures that are more active use more oxygen.
    d. structures that are more active use less oxygen.

ANSWER: c

59. In functional neuroimaging, a difference image is used for determining:
    a. how long it takes a person to complete a memory task.
    b. what percentage of the brain is being used at any given moment.
    c. how much neural activity has changed relative to a baseline.
    d. how much neural activity occurs while a person is relaxed.

ANSWER: c

60. Functional magnetic resonance imaging (fMRI):
    a. directly measures neural activity.
    b. usually picks up more electrical brain activity than an electroencephalography (EEG).
    c. requires injecting radioactive materials into the participant's bloodstream.
    d. measures differences in oxygen levels in the blood.

ANSWER: d

61. Which neuroimaging technique uses electrodes to record electrical activity emitted from a person's scalp?
    a. positron emission tomography (PET)
    b. functional magnetic resonance imaging (fMRI)
    c. electroencephalography (EEG)
    d. computed tomography (CT)

ANSWER: c

62. If a researcher uses an EEG to measure the brain's response to a visual stimulus, neurons other than those that respond to visual stimuli will also be active. How do researchers determine which neurons are responding only to the visual stimulus?
    a. They present the visual stimulus at a very high intensity.
    b. They measure the activity of just one neuron at a time.

Copyright Macmillan Learning. Powered by Cognero.

Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank

Chapter 02: Multiple Choice

c. They make sure to present only a visual stimulus and nothing else.
d. They take the average of several EEGs.

ANSWER: d

63. An event-related potential (ERP) is:
a. the average of many EEGs across repetitions of an event.
b. a measure of the amount oxygen being used by brain structures.
c. a measure of the activity of a single neuron.
d. the electrical activity emitted from the scalp, recorded on a single trial.

ANSWER: a

64. In comparison to the fMRI, the EEG technique:
a. is less expensive.
b. gives less precise information about rapid changes in the brain.
c. has better spatial precision.
d. is better at measuring metabolic activity in the brain.

ANSWER: a

65. What technique can be used to measure the firing pattern of an individual neuron?
a. positron emission tomography (PET)
b. functional magnetic resonance imaging (fMRI)
c. electroencephalography (EEG)
d. single-cell recording

ANSWER: d

66. Single-cell recordings:
a. are very uncomfortable for animals when electrodes are implanted into their brains.
b. have been used to demonstrate cells that are "tuned" to particular body movements.
c. are taken from the surface of an animal's brain.
d. are used to determine the activity in large regions of the brain.

ANSWER: b

67. Highly superior autobiographical memory (HSAM) is the ability to recall:
a. specific details of almost any day of one's life.
b. things photographically.
c. nonemotional events but not emotional events.
d. general facts but not personal memories.

ANSWER: a

68. Which field involves the study of patients with specific types of brain damage in order to learn about the relation between brain function and behavior?

Copyright Macmillan Learning. Powered by Cognero.

Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank

Chapter 02: Multiple Choice

a. neurophysiology
b. functional neuroimaging
c. neuropsychology
d. synaptic plasticity

ANSWER: c

69. What is an *engram*?
a. a measure of the amount of electrical activity on a person's scalp
b. a change in synaptic transmission as a result of recent activity
c. a physical change in the brain that forms the basis of a memory
d. a map that shows which part of the body each region of M1 controls

ANSWER: c

70. Suppose researchers train a pigeon to peck at a blue disc to obtain food. They then lesion a very small part of its brain and find that the pigeon has forgotten that it needs to peck the blue disc for food. Such a finding would be evidence for:
a. the theory of equipotentiality.
b. the Bell–Magendie law of neural specialization.
c. synaptic plasticity.
d. the engram.

ANSWER: d

71. The idea that memories are stored across the brain as a whole is called the:
a. engram theory.
b. theory of equipotentiality.
c. localization theory.
d. phrenology theory.

ANSWER: b

72. One of the reasons Karl Lashley was unable to find evidence for the engram was that:
a. he used too simple a task for assessing memory.
b. he limited his lesions to the cerebral cortex.
c. he was unable to lesion rat brains due to ethical constraints.
d. the memories of rats are too different from the memories of humans.

ANSWER: b

73. What is the name of the narrow gap across which neurons pass chemical messages to each other?
a. axon
b. dendrite
c. synapse
d. cell body

Copyright Macmillan Learning. Powered by Cognero.

Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank

Chapter 02: Multiple Choice

ANSWER: c

74. Most synapses are between the:
    a. axons of the presynaptic and the postsynaptic neurons.
    b. dendrites of the presynaptic and the postsynaptic neurons.
    c. axon of the presynaptic neuron and the dendrite of the postsynaptic neuron.
    d. dendrite of the presynaptic neuron and the axon of the postsynaptic neuron.

ANSWER: c

75. Neurotransmitters are:
    a. chemical substances that carry messages between neurons.
    b. the part of a neuron that receives signals from other neurons.
    c. types of neurons that connect other neurons together.
    d. types of neurons that have pyramid-shaped cell bodies.

ANSWER: a

76. Molecules on the surface of the postsynaptic cell that bind with and respond to neurotransmitters are called:
    a. synapses.
    b. receptors.
    c. neuromodulators.
    d. glia.

ANSWER: b

77. Most neurons can produce and release _____ neurotransmitter(s) and can receive _____ neurotransmitter(s).
    a. many different; many different
    b. only one; only one
    c. only one; many different
    d. many different; only one

ANSWER: c

78. After a neuron fires, there is a brief period during which it is unable to fire again. This is called the _____ period.
    a. refractory
    b. inactivation
    c. postsynaptic
    d. reuptake

ANSWER: a

79. Inactivation and reuptake are mechanisms for:
    a. inhibiting neurons from responding.
    b. removing dead neurons from the brain.

Copyright Macmillan Learning. Powered by Cognero.

Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank

Chapter 02: Multiple Choice

c. increasing the amount of neurotransmitter that is released.
d. clearing neurotransmitters from the synapse.

ANSWER: d

80. Neurotransmitters that affect activity in entire brain areas, rather than just at a single synapse, are called:
a. neuromodulators.
b. refractory transmitters.
c. glia.
d. reuptake transmitters.

ANSWER: a

81. _____ is the ability of synapses to changes as a result of experience.
a. Neuromodulation
b. Synaptic plasticity
c. Neural plasticity
d. Long-term potential

ANSWER: b

82. What is synaptic plasticity?
a. the ability of synapses to change as a result of experience
b. the finding that neurons are not rigid but can bend to connect with nearby neurons
c. the ability of neurons to absorb a stain of silver chromate
d. the finding that drugs can impact the release of neurotransmitters by the presynaptic neuron

ANSWER: a

83. Long-term potentiation has been shown to occur:
a. in the hippocampus, but not in other brain areas.
b. only when the presynaptic neuron is stimulated.
c. in all brain areas, except for the hippocampus.
d. when the presynaptic and postsynaptic neurons are active at the same time.

ANSWER: d

84. Long-term potentiation is when:
a. neurons continue to respond long after a stimulus has been removed.
b. a recent strong stimulus causes a neuron to over-respond to a subsequent stimulus.
c. neurons respond in the absence of a stimulus.
d. a strong stimulus leads to a weaker-than-normal response in a neuron.

ANSWER: b

85. Which statement has NOT been proposed as a mechanism of LTP?
a. Postsynaptic receptors become more responsive to inputs.

Copyright Macmillan Learning. Powered by Cognero.

Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank

Chapter 02: Multiple Choice

b. Presynaptic neurons are changed by a retrograde messenger.
c. New synapses are built.
d. Postsynaptic neurons release more neurotransmitters.

ANSWER: d

86. Long-term potentiation:
a. was first observed in the thalamus.
b. occurs when the postsynaptic neuron is stimulated with a high-frequency burst.
c. can last for hours or even longer.
d. involves a weakening in synaptic transmission following recent activity.

ANSWER: c

87. When synaptic transmission becomes less effective as a result of recent activity, it is known as:
a. long-term potentiation.
b. inhibition.
c. retrograde potentiation.
d. long-term depression.

ANSWER: d

88. Which statement about the homunculus is FALSE?
a. It represents the activity of neurons in the hippocampus.
b. It means "little man."
c. Larger body parts have less area devoted to them.
d. It exaggerates the parts of the body that have more fine motor control.

ANSWER: a

89. The technique in which researchers activate parts of the brain by placing a magnet on the skull is called:
a. single-cell recording.
b. transcranial magnetic stimulation (TMS).
c. functional magnetic resonance imaging (fMRI).
d. electroencephalography (EEG).

ANSWER: b

90. The illusion of feeling that a novel experience has happened before is called:
a. hebbian learning.
b. synaptic plasticity.
c. memory.
d. déjà vu.

ANSWER: d

91. Classically conditioning animals by using one electrode to generate neural firing patterns that would occur

Copyright Macmillan Learning. Powered by Cognero.

Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank

Chapter 02: Multiple Choice

during the sensation of a sound and pairing that with stimulation from a second electrode that provokes a reflexive motor response is known as what kind of training?

a. classical
b. transcranial magnetic stimulation
c. virtual reality
d. transcranial direct-current stimulation

ANSWER: c

92. _____ are chemical substances that alter the biochemical functioning of the body.

a. Glutamates
b. Drugs
c. GABAs
d. Acetylcholines

ANSWER: b

93. Which mechanism is NOT one by which drugs alter synaptic transmission?

a. increasing the ability of the presynaptic neuron to produce neurotransmitter
b. increasing the ability of the presynaptic neuron to receive neurotransmitter
c. decreasing the ability of the presynaptic neuron to produce neurotransmitter
d. altering the mechanisms for clearing neurotransmitter from the synapse

ANSWER: b

94. Drugs are able to change all EXCEPT:

a. behavior of the presynaptic neuron.
b. behavior of the postsynaptic neuron.
c. rate at which neurotransmitters are cleared from the synapse.
d. rate of neuroplasticity.

ANSWER: d

95. Which statement is FALSE?

a. The influence of drugs on learning and memory is usually a side effect.
b. Drugs affect our brain but don't change neural activity.
c. Drugs can alter the ability of postsynaptic receptors to receive neurotransmitters.
d. Drugs affect the brain by altering synaptic transmission.

ANSWER: b

96. Britney is trying to teach her little brother to use his manners. She gives him a cookie whenever he remembers to say "please." Which neurotransmitter regulates the toddler's use of manners to obtain the cookie?

a. glutamate
b. dopamine
c. GABA

Copyright Macmillan Learning. Powered by Cognero.

Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank

d. acetylcholine

ANSWER: b

97. Which statement is FALSE regarding the ability of drugs to improve memory in healthy individuals?
   a. Various drugs can increase levels of acetylcholine in patients with Alzheimer's disease, which may produce temporary memory improvements in these adults.
   b. Drugs can be used to improve attention, but it isn't clear whether this results in improvement in memory.
   c. Drugs can be used to treat sleep disorders, which may help increase attention, though these might not be good for memory.
   d. Various drugs have shown "brain-boosting" improvements in the memory of healthy adults.

ANSWER: d

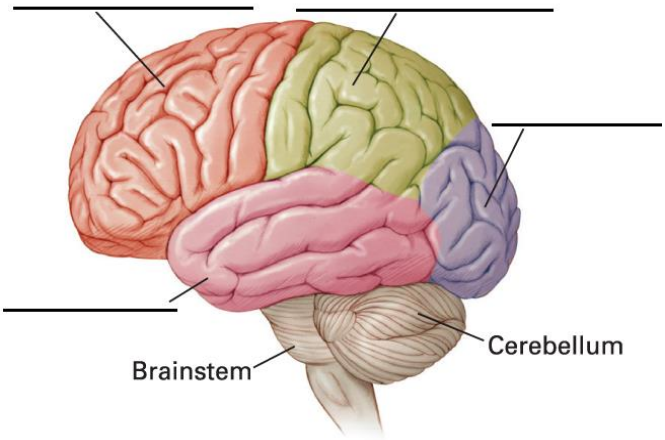
Copyright Macmillan Learning. Powered by Cognero.

Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank

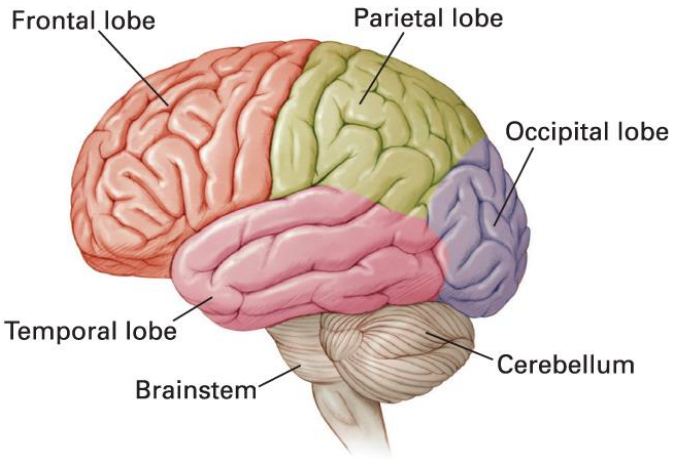
Name:_____ Class:_____ Date:_____

Chapter 02: Essay

1. Label the four lobes of the cerebral cortex in the figure.



ANSWER:



2. List two brain structures that are especially important for learning and memory. Briefly describe the involvement of each one.

ANSWER: Grading criteria: There are six structures described in the chapter:

- Thalamus—receives sensory input from the PNS
- Basal ganglia—is important for learning skills (movement) and in sensory-guided actions
- Hippocampus—is critical for learning new information and remembering autobiographical information
- Amygdala—adds emotional content to memories
- Cerebellum—site of memory storage and processing in classical conditioning
- Frontal cortex—ability to juggle thoughts and memories

3. Valentina is learning to drive a car. Describe the role of each brain lobe in helping her learn to drive.

ANSWER: Grading criteria: Include the four lobes: frontal lobe (helps her plan her route and follow a procedure of what to do when she gets into the car—check the mirrors, hold down the brake, put in the key, etc.); parietal lobe (helps her feel the steering wheel in her hands and the pedals under her foot); temporal lobe (helps her listen for cars, hear the blinkers when making turns, etc.); and occipital lobe (helps her see the street, see street signs and lights, see cars around her, perceive depth and distance, etc.).

Copyright Macmillan Learning. Powered by Cognero.

Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank

Name:_____ Class:_____ Date:_____

Chapter 02: Essay

4. What was one of the problems with phrenology?

ANSWER: Grading criteria: The main problem is that phrenology assumes that the shape of the skull reflects the shape of the brain, which is not true. Other acceptable answers: Gall studied only the skulls, not the actual brains, of living people; it was misused by quacks trying to make money; it was used to justify mistreatment of criminals and others deemed inferior to the ruling class.

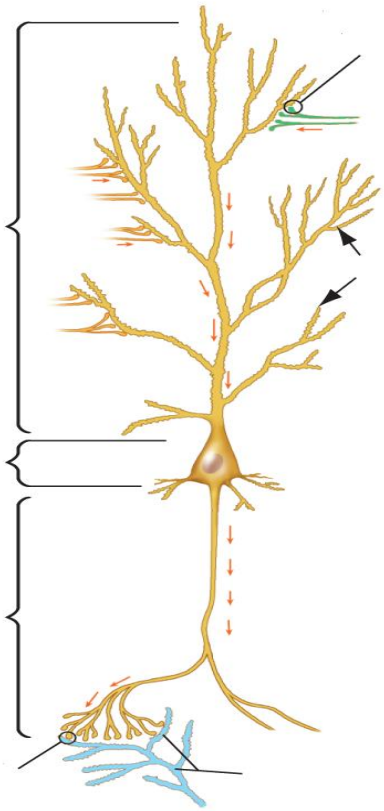
5. What is the difference between structural neuroimaging and functional neuroimaging?

ANSWER: Grading criteria: The difference between these two types of neuroimaging is their focus. Structural neuroimaging provides a picture of the brain tissues and brain lesions at one point in time, focusing on visualizing the structures themselves. However, functional neuroimaging provides a picture of activity in the brain to demonstrate what the brain is doing at a particular time or during a particular task. This focus is on what the structures are doing more than what they look like.

6. Describe the process of transmitting messages from one neuron to the next.

ANSWER: Grading criteria: Include basic details: presynaptic cell, release of neurotransmitter (and that it is a chemical), postsynaptic receptors bind to neurotransmitter, postsynaptic cell integrates the message and decides to fire if the signal is strong enough. (Ideally, explain that this is all-or-nothing.)

7. Label the parts of the neuron in the figure.



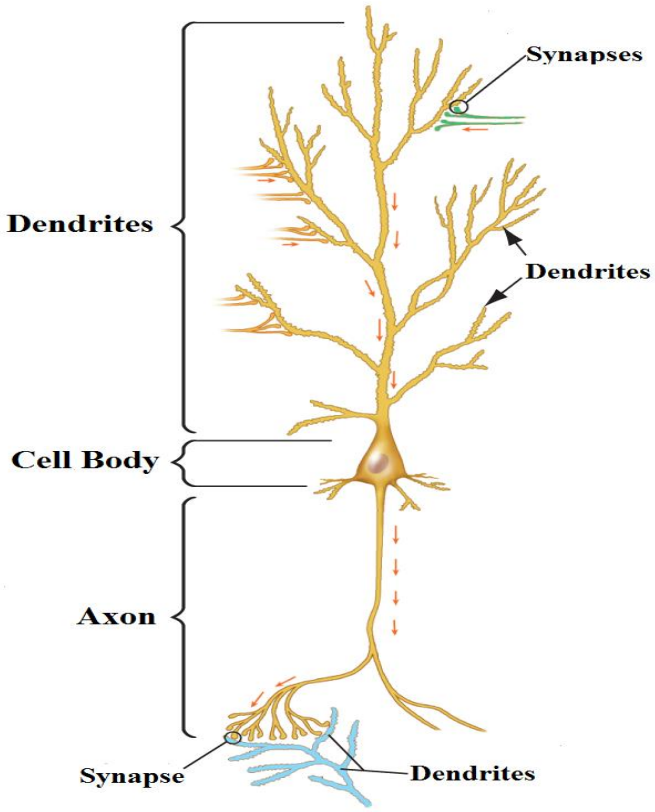
Copyright Macmillan Learning. Powered by Cognero.

Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank

Name:_____ Class:_____ Date:_____

Chapter 02: Essay

ANSWER:



8. What is the difference in neurons between rats raised in a deprived versus enriched environment?

ANSWER: Grading criteria: The major difference between these two groups is that those raised in an enriched environment have more and longer dendrites extending from their neurons than those raised in a controlled (deprived) environment.

9. Give an example of a reflex that humans have.

ANSWER: Grading criteria: There are numerous possible examples, including eyeblink, knee-jerk, newborns' sucking, diving, and palmar grasp. Answer must not be a learned response (e.g., salivating when driving past one's favorite restaurant, which is learned, not reflexive).

10. Describe the sensory and motor processes involved in crossing a busy street, including the areas of the brain that are involved.

ANSWER: Grading criteria: Some of the key components are as follows: watch for cars; visual input passes from the eyes, through the thalamus, to the visual cortex; the frontal cortex helps determine movements such as stepping down off the curb and how quickly to move legs; this information is sent to M1; M1 sends messages down to the brainstem, which connects to the spinal cord, and so the messages travel down the spinal cord to muscles; one walks across the street.

11. Describe the process of single-cell recording. When would a researcher want to use this technique?

ANSWER: Grading criteria: Single-cell recording involves implanting a microelectrode into a single neuron and

Copyright Macmillan Learning. Powered by Cognero.

Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank

transmitting the signal to speakers that "hear" the response; a stimulus presented or the animal subject performs a task as changes in the response of the neuron are measured. Researchers would use this technique in order to find out what individual neurons' roles are in a behavior, which is more precise than determining entire brain areas involved.

12. Explain what Karl Lashley meant by the engram. How did he attempt to find it? Was he successful? What did his findings teach us about learning in the brain?

ANSWER: Grading criteria: The engram is the supposed physical change in the brain that forms the basis of a memory. Lashley tried to find the engram by lesioning different areas of rats' brains and examining the effect on them of learning to run a maze. He was not successful—no one area appeared to be crucial for remembering the maze. His results revealed that memories are not completely localized in the brain.

13. Explain why experimental brain lesions in animals allow for greater precision than is typically possible in humans.

ANSWER: Grading criteria: Explain that human brain lesions are usually due to accident/illness, vary from person to person, and can involve many brain areas; in animals, can disable specific single brain regions. Note that a general explanation of why animal research is justified would not be sufficient to answer this question.

14. Describe the procedures used to elicit long-term potentiation in a neuron.

ANSWER: Grading criteria: Include the main steps: Stimulate cell A, record from cell B; stimulate A with a burst of high-frequency stimulation; later, stimulate A again with weak stimulation, see that B responds more strongly than it did before.

15. Describe the two techniques that can be used to stimulate neural activity.

ANSWER: Grading criteria:

• Electrical stimulation of individual neurons—uses electrodes to deliver electrical stimulation, causing a response in the neuron

• Transcranial magnetic stimulation—stimulates entire brain areas in humans with a strong magnetic pulse

16. Describe the four major processes of synaptic transmission that can be affected by drugs.

ANSWER: Grading criteria: Include the four major processes: neurotransmitter release (increase or decrease the ability of the presynaptic neuron to produce or release neurotransmitter); activation of postsynaptic receptors (increase or decrease the ability of the postsynaptic receptors to receive the chemical message via the neurotransmitter); neurotransmitter inactivation; and neurotransmitter reuptake.

17. Suppose Mateo's roommate wants to take Ritalin (an attention-boosting drug) to help remember information for an upcoming exam. What should Mateo tell his roommate regarding the effects of taking Ritalin or other attention-boosting drugs on memory?

ANSWER: Grading criteria: Attention can improve memory in general; however, no good evidence exists at this time that any attention-boosting drugs improve memory in normal healthy people.

Copyright Macmillan Learning. Powered by Cognero.

Learning and Memory From Brain to Behavior 4th edition Gluck Test Bank