

1. In grocery stores and on television there is a trend toward marketing "brain foods" to the general public. These "brain foods" contain \_\_\_\_\_, which protect your cells from free radicals.
- antioxidants
  - omega-3 fats
  - B vitamins
  - hormone replacements

*ANSWER:* a

*REFERENCES:* Introduction

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.13 - How does nutrition influence brain changes and cognitive activity?

*KEYWORDS:* Factual

2. Neuroimaging has allowed us to
- solve the nature-nuture controversy.
  - identify the causes of Alzheimer's disease.
  - see inside the brain of a living person to examine the structures of the brain.
  - examine one's genetic structure and predict which individuals will develop chronic diseases with age.

*ANSWER:* c

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Conceptual

3. The field of neuroscience can be defined as
- the study of free radicals.
  - the study of the compensatory changes that older adults make in adapting to behavioral decline.
  - the use of stem cells to generate new neurons.
  - the study of the brain, particularly the study of plasticity in the aging brain.

*ANSWER:* d

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Factual

4. Which field of science has revolutionized our understanding of the relationships between the brain and behavior?
- psychoanalytic theory
  - social cognitive theory
  - neuroscience
  - molecular anatomy

*ANSWER:* c

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Factual

5. Which of the following is associated with neuroscience?
- a. brain structures and functioning
  - b. the effect of reinforcements, such as rewards and punishments, on behavior
  - c. repressed impulses and their effect on the id, ego, and superego
  - d. the theory of the mind

*ANSWER:* a

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Factual

6. Neuroimaging has allowed us to
- a. determine what a healthy brain looks like.
  - b. see exactly how the brain changes over time.
  - c. determine which brain changes are normative and which are not.
  - d. understand that neuroimaging must be used carefully and ethically as we are still figuring out (a) what is normal and what is not and (b) what a "healthy" brain looks like.

*ANSWER:* d

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Conceptual

7. The two neuroimaging techniques that are most often used provide
- a. detailed images of the anatomical features of the brain and indications of brain activity.
  - b. measurements of the diffusion of water molecules in brain tissue.
  - c. measures of heart beat and respiration changes in older adults.
  - d. evidence of the positivity effect.

*ANSWER:* a

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Factual

8. X-rays, CT scans, and MRIs are examples of
- a. genetic imaging.
  - b. nonnormative brain development.
  - c. structural neuroimaging.
  - d. functional neuroimaging.

*ANSWER:* c

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Factual

9. Magnetic resonance imaging (MRI) produces
- a. pictures that represent brain activity as different colors.
  - b. images of brain activity with low anatomical detail.
  - c. pictures of healthy brain functioning but not of pathological brain functioning.
  - d. highly detailed images of the anatomical structures of the brain.

*ANSWER:* d

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Factual

10. Structural neuroimaging focuses on the \_\_\_\_\_ of the brain.

- a. blood flow
- b. structure
- c. development
- d. function

*ANSWER:* b

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Factual

11. Functional imaging techniques focus on the \_\_\_\_\_ of the brain.

- a. structure
- b. anatomical features
- c. activity
- d. blood flow

*ANSWER:* c

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Factual

12. SPECT and PET are examples of

- a. structural neuroimaging techniques.
- b. functional neuroimaging techniques.
- c. Alzheimer's assessments.
- d. behavioral tests that assess frontal lobe atrophy.

*ANSWER:* b

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Factual

13. Which approach compares the brain functioning of healthy older adults with adults displaying various pathological disorders of the brain?

- a. neurobiological
- b. bioneurosocial
- c. psychological
- d. neuropsychological

*ANSWER:* d

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Factual

14. Which of the following approaches attempts to link measures of cognitive performance to measures of brain functioning?
- a. neurocorrelational
  - b. psychological
  - c. neuropsychological
  - d. neurobiosocial

*ANSWER:* a

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Conceptual

15. Why are the results from neurocorrelational studies considered speculative?
- a. because random sampling is not used
  - b. because the measures used in these types of studies lack validity
  - c. because we cannot be certain that the behavioral tests accurately assess the actual anatomical and functional activity of the brain region under investigation
  - d. because correlational findings are more speculative than those acquired from experimental designs

*ANSWER:* c

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Conceptual

16. Which approach attempts to directly link functional brain activity with cognitive behavioral data?
- a. neurobiological
  - b. correlational
  - c. activation imaging
  - d. psychological

*ANSWER:* c

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Factual

17. \_\_\_\_\_ changes allow older adults to adapt to the inevitable decline of specific areas of the brain.
- a. Compensatory
  - b. Personality
  - c. Compromise
  - d. Collaboration

*ANSWER:* a

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Factual

18. Neuroscience has brought an important perspective to studying cognitive aging. Specifically, it has
- a. allowed us to find a cure for Alzheimer's disease.
  - b. given us ways to test our theories of brain-behavior relations.
  - c. showed us how to reverse cognitive decline in elderly individuals.
  - d. given us ways to eliminate free radicals.

*ANSWER:* b

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Conceptual

19. Research methods that focus on understanding age-related changes in the brain can help explain why certain \_\_\_\_\_ functions are preserved.
- a. cognitive
  - b. muscle
  - c. physical health
  - d. sensory

*ANSWER:* a

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.02 - What are the main research methods used and issues studied in neuroscience research in adult development and aging?

*KEYWORDS:* Factual

20. Research methods that focus on age-related changes in the brain allow us to better understand why certain cognitive functions, such as well-practiced tasks, vocabulary, and wisdom, can be \_\_\_\_\_ in old age.
- a. lost
  - b. preserved
  - c. altered
  - d. distorted

*ANSWER:* b

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.02 - What are the main research methods used and issues studied in neuroscience research in adult development and aging?

*KEYWORDS:* Conceptual

21. Processing speed \_\_\_\_\_ as people age.
- a. increases
  - b. decreases
  - c. becomes distorted
  - d. remains the same

*ANSWER:* b

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.02 - What are the main research methods used and issues studied in neuroscience research in adult development and aging?

*KEYWORDS:* Factual

22. In the past, much research regarding adult development and aging was based upon \_\_\_\_\_ data.

- a. psychosocial
- b. behavioral
- c. social
- d. neuroimaging

*ANSWER:* b

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.02 - What are the main research methods used and issues studied in neuroscience research in adult development and aging?

*KEYWORDS:* Conceptual

23. Neuroscientific methods have shown that brain activity involved in \_\_\_\_\_ occurs in areas of the brain that are among the first affected by Alzheimer's disease.

- a. recognizing faces
- b. remembering items on a list
- c. emotion regulation
- d. executive functioning activities such as planning

*ANSWER:* a

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.02 - What are the main research methods used and issues studied in neuroscience research in adult development and aging?

*KEYWORDS:* Conceptual

24. Key structural, or anatomical, features of the neuron include all the following except

- a. axons.
- b. dendrites.
- c. terminal branches.
- d. synapses.

*ANSWER:* d

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.03 - How is the brain organized structurally?

*KEYWORDS:* Factual

25. Most neuroscience research has focused on the

- a. right axon.
- b. brain stem.
- c. cerebral cortex.
- d. focal area.

*ANSWER:* c

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.03 - How is the brain organized structurally?

*KEYWORDS:* Factual

26. The \_\_\_\_\_ are involved in higher-order executive functions such as the ability to make and carry out plans, switch between tasks, and maintain attention and focus.
- a. cerebellum and hippocampus
  - b. prefrontal and frontal cortex
  - c. hippocampus and limbic system
  - d. cerebellum and amygdala

*ANSWER:* b

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.03 - How is the brain organized structurally?

*KEYWORDS:* Conceptual

27. Overall, there is considerable shrinkage that occurs in the aging brain. However, the shrinkage is selective. The prefrontal cortex, the \_\_\_\_\_, and the \_\_\_\_\_ all show profound shrinkage.
- a. frontal lobe; left cortex
  - b. parietal; occipital
  - c. cerebellum; amygdala
  - d. hippocampus; cerebellum

*ANSWER:* d

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.03 - How is the brain organized structurally?

*KEYWORDS:* Factual

28. The areas of the brain related to sensory functions, such as the visual cortex, show relatively little
- a. shrinkage.
  - b. improvement across the life span.
  - c. white matter.
  - d. intensity.

*ANSWER:* a

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.03 - How is the brain organized structurally?

*KEYWORDS:* Conceptual

29. The white matter area of the brain shows deterioration with increasing age. A neuroimaging method called \_\_\_\_\_ assesses the rate and direction that water diffuses through the white matter.
- a. fMRI
  - b. white matter hyperintensities
  - c. CT scan
  - d. diffusion tensor imaging

*ANSWER:* d

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.03 - How is the brain organized structurally?

*KEYWORDS:* Factual

30. White matter hyperintensities (WMH) may indicate
- a. extremely high intelligence.
  - b. predisposition to Alzheimer's disease.
  - c. brain pathologies such as neural atrophy.
  - d. emotional pathology.

*ANSWER:* c

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.03 - How is the brain organized structurally?

*KEYWORDS:* Conceptual

31. White matter hyperintensities (WMH) are linked to cerebrovascular diseases, which are preventable and can be treated with
- a. surgery and medications.
  - b. medications and lifestyle changes.
  - c. cognitive behavioral therapy and changes in diet.
  - d. hypnosis and lifestyle changes.

*ANSWER:* b

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.03 - How is the brain organized structurally?

*KEYWORDS:* Conceptual

32. \_\_\_\_\_ functioning includes processes such as the ability to control what one is thinking about at any one moment in time and the ability to focus on relevant information and eliminate irrelevant information.
- a. Executive
  - b. Cognitive
  - c. Psychological
  - d. Conscious

*ANSWER:* a

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.03 - How is the brain organized structurally?

*KEYWORDS:* Factual

33. Executive functioning failures in older adults can be seen when older adults
- a. have difficulty factoring out false information in an article they are reading.
  - b. have trouble recognizing familiar faces.
  - c. have problems maintaining their balance and coordination.
  - d. experience visual difficulties such as distinguishing certain colors and reduced night vision.

*ANSWER:* a

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.03 - How is the brain organized structurally?

*KEYWORDS:* Applied

34. For adult development and aging research, the most important elements of the limbic system are the
- a. prefrontal and frontal cortex.
  - b. corpus callosum and cerebellum.
  - c. corpus callosum and frontal cortex.
  - d. amygdala and hippocampus.

*ANSWER:* d

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.03 - How is the brain organized structurally?

*KEYWORDS:* Factual

35. Reductions in the \_\_\_\_\_ of the hippocampus are related to memory decline.

- a. volume
- b. density
- c. dendritic tangles
- d. neurotransmitters

*ANSWER:* a

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.03 - How is the brain organized structurally?

*KEYWORDS:* Factual

36. What are the age-related changes in neurons?

- a. There are no age-related changes in neurons, but there are changes in neurotransmitters.
- b. The number of neurons increases.
- c. Tangles develop in the fibers that make up the axon.
- d. The number of connections between neurons, measured as synapses, increases after age 75.

*ANSWER:* c

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.03 - How is the brain organized structurally?

*KEYWORDS:* Factual

37. Research finding correlations between temporal lobe atrophy and cognitive declines in old age have led researchers to wonder if Alzheimer's disease

- a. is inevitable for all humans.
- b. is an acceleration of the normal aging process.
- c. can be eliminated using stem cells.
- d. is caused by cardiovascular disease.

*ANSWER:* b

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.03 - How is the brain organized structurally?

*KEYWORDS:* Applied

38. Which researcher examined the relationships between brain functioning and emotion?

- a. Maslow
- b. Winecoff
- c. Piaget
- d. Bandura

*ANSWER:* b

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.03 - How is the brain organized structurally?

*KEYWORDS:* Factual

39. Research by Winecoff and colleagues (2011) indicates that as cognitive abilities decline, people may be less able to \_\_\_\_\_, a pattern typical in diseases such as dementia.

- a. ignore irrelevant information
- b. learn new tasks
- c. hold as many pieces of information in working memory at one time
- d. regulate their emotions

*ANSWER:* d

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.03 - How is the brain organized structurally?

*KEYWORDS:* Conceptual

40. Across the research, the typical finding is that older adults have reduced brain activity in the \_\_\_\_\_ areas when compared with younger adults.
- a. prefrontal and temporal
  - b. cerebellum and cortex
  - c. corpus callosum
  - d. limbic system

*ANSWER:* a

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.03 - How is the brain organized structurally?

*KEYWORDS:* Conceptual

41. \_\_\_\_\_ is the neurotransmitter that sends messages throughout the brain.
- a. Estrogen
  - b. Insulin
  - c. Cytosine
  - d. Dopamine

*ANSWER:* d

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.05 - What changes occur in neurotransmitters as we age?

*KEYWORDS:* Factual

42. The dopaminergic system is associated with high-level cognitive functioning such as inhibiting thoughts, \_\_\_\_\_, and planning.
- a. attention
  - b. socialization
  - c. activity level
  - d. temperament

*ANSWER:* a

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.05 - What changes occur in neurotransmitters as we age?

*KEYWORDS:* Factual

43. The effective functioning of the dopaminergic system \_\_\_\_\_ in normal aging.
- a. increases
  - b. declines
  - c. stays the same
  - d. misfires

*ANSWER:* b

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.05 - What changes occur in neurotransmitters as we age?

*KEYWORDS:* Conceptual

44. Research has found that declines in the dopaminergic system are related to declines in \_\_\_\_\_ memory and \_\_\_\_\_ tasks.
- a. long-term; speed
  - b. semantic; attention
  - c. episodic; thought
  - d. episodic; speed

*ANSWER:* d

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.05 - What changes occur in neurotransmitters as we age?

*KEYWORDS:* Conceptual

45. Abnormal processing of which neurotransmitter has been implicated in cognitive decline in normal aging, Alzheimer's disease, and schizophrenia?
- a. serotonin
  - b. dopamine
  - c. acetylcholine
  - d. cerebraltonin

*ANSWER:* a

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.05 - What changes occur in neurotransmitters as we age?

*KEYWORDS:* Factual

46. To explore brain-related factors that might explain age differences in cognitive functioning, a researcher may use a(n) \_\_\_\_\_ to examine how changes in brain activity occur in correspondence with changes in task demands.
- a. EEG
  - b. MRI
  - c. fMRI
  - d. eMRI

*ANSWER:* c

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.06 - What changes occur in brain structures as we age?

*KEYWORDS:* Conceptual

47. Older adults sometimes show reduced activation of appropriate prefrontal regions. At other times, they show the same or greater recruitment of these areas, when compared with younger adults, depending on the task they are doing. This indicates that prefrontal recruitment is \_\_\_\_\_.
- a. unpredictable.
  - b. impossible to measure.
  - c. predictable in younger adults but unpredictable in older adults.
  - d. context dependent.

*ANSWER:* d

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.06 - What changes occur in brain structures as we age?

*KEYWORDS:* Conceptual

48. Which of the following are older adults more motivated to maintain?
- a. social memories
  - b. positive affect
  - c. unconscious memories
  - d. white matter

*ANSWER:* b

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.07 - What do age-related structural brain changes mean for behavior?

*KEYWORDS:* Factual

49. Structural brain changes have been linked to executive function. For example, age-related declines in \_\_\_\_\_ may affect white matter structures, which underlie all the areas important to executive functioning.
- serotonin
  - the functioning of blood vessels
  - cognitive abilities
  - unilateralization

*ANSWER:* b

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.07 - What do age-related structural brain changes mean for behavior?

*KEYWORDS:* Factual

50. Which region of the brain is implicated in emotional processing?
- cerebellum
  - sensorimotor area
  - hippocampus
  - ventromedial prefrontal cortex

*ANSWER:* d

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.07 - What do age-related structural brain changes mean for behavior?

*KEYWORDS:* Factual

51. P-FIT stands for
- Passive-Frontal Lobe Integration Theory.
  - Parieto-Frontal Integration Theory.
  - Parieto-Fractional Imperative Test.
  - Partial-Frontal Interest Theory.

*ANSWER:* b

*REFERENCES:* Making Sense of Neuroscience Research: Explaining Changes in Brain-Behavior Relations

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.08 - What is the P-FIT theory, and what does it explain?

*KEYWORDS:* Factual

52. The P-FIT theory created by Jung and Haier (2007) was based upon
- a cross-sectional study of 120 Alzheimer's patients.
  - a meta-analysis of 37 research studies.
  - Piaget's theory of cognitive development.
  - a longitudinal study of 500 individuals with dementia.

*ANSWER:* b

*REFERENCES:* Making Sense of Neuroimaging Research: Explaining Changes in Brain-Behavior Relations

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.08 - What is the P-FIT theory, and what does it explain?

*KEYWORDS:* Conceptual

53. Reduced brain activation or \_\_\_\_\_ of the prefrontal cortex occurs in the elderly during intentional cognitive processing.
- a. over-recruitment
  - b. decline-recruitment
  - c. low-recruitment
  - d. under-recruitment

*ANSWER:* d

*REFERENCES:* Making Sense of Neuroscience Research: Explaining Changes in Brain-Behavior Relations

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.09 - How do older adults attempt to compensate for age-related changes in the brain?

*KEYWORDS:* Conceptual

54. Reduced frontal recruitment in the aging brain is \_\_\_\_\_ dependent.
- a. recall
  - b. context
  - c. recognition
  - d. thought

*ANSWER:* b

*REFERENCES:* Making Sense of Neuroscience Research: Explaining Changes in Brain-Behavior Relations

*LEARNING OBJECTIVES:* ADaD.CAVA.15.02.09 - How do older adults attempt to compensate for age-related changes in the brain?

*KEYWORDS:* Conceptual

55. It is now widely accepted that bilateral activation in the aging brain is
- a. evidence of compensation for deterioration in certain brain regions.
  - b. the result of chronic illnesses in the individual.
  - c. evidence that older brains are inefficient.
  - d. no different than what is observed in younger brains.

*ANSWER:* a

*REFERENCES:* Making Sense of Neuroscience Research: Explaining Changes in Brain-Behavior Relations

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.09 - How do older adults attempt to compensate for age-related changes in the brain?

*KEYWORDS:* Conceptual

56. Which of the following is **not** one of the models discussed in your textbook that seeks to explain how the brain reorganizes and compensates for age-related changes?
- a. P-FIT
  - b. HAROLD
  - c. CRUNCH
  - d. STAC

*ANSWER:* a

*REFERENCES:* Making Sense of Neuroscience Research: Explaining Changes in Brain-Behavior Relations

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.10 - What are the major differences between the HAROLD, CRUNCH, and STAC models?

*KEYWORDS:* Factual

57. The HAROLD model indicates that older brains recruit additional neural units to increase attentional resources, processing speed, or
- a. inhibitory control.
  - b. long-term memory capacity.
  - c. facial recognition.
  - d. intelligence.

*ANSWER:* a

*REFERENCES:* Making Sense of Neuroscience Research: Explaining Changes in Brain-Behavior Relations

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.10 - What are the major differences between the HAROLD, CRUNCH, and STAC models?

*KEYWORDS:* Conceptual

58. The CRUNCH model suggests that there are two main mechanisms the older brain uses to perform tasks:
- a. increased synapses and neurotransmitters.
  - b. memory aids such as mnemonic devices and brain training exercises.
  - c. brain training and recruiting friends to help with cognitive tasks.
  - d. more of the same and supplementary processes.

*ANSWER:* d

*REFERENCES:* Making Sense of Neuroscience Research: Explaining Changes in Brain-Behavior Relations

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.10 - What are the major differences between the HAROLD, CRUNCH, and STAC models?

*KEYWORDS:* Conceptual

59. One of the most significant findings in the neuroscience literature is the observed \_\_\_\_\_ of neural activation patterns in older adults' brain activity when compared with the brain functioning of younger adults.
- a. continuity
  - b. lateralization
  - c. bilateralization
  - d. interruption

*ANSWER:* c

*REFERENCES:* Making Sense of Neuroscience Research: Explaining Changes in Brain-Behavior Relations

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.10 - What are the major differences between the HAROLD, CRUNCH, and STAC models?

*KEYWORDS:* Conceptual

60. Activation of both left and right prefrontal areas of the brain is called \_\_\_\_\_ activation.
- a. bilateral
  - b. unilateral
  - c. hyperintensive
  - d. atrophic

*ANSWER:* a

*REFERENCES:* Making Sense of Neuroscience Research: Explaining Changes in Brain-Behavior Relations

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.10 - What are the major differences between the HAROLD, CRUNCH, and STAC models?

*KEYWORDS:* Factual



65. STAC stands for
- a. Social Tact and Cognition
  - b. Specialized Telemeres and Cognitive Functioning
  - c. Scaffolding Theory of Cognitive Aging
  - d. Social-Congitive Theory of Adult Competence

*ANSWER:* c

*REFERENCES:* Making Sense of Neuroimaging Research: Explaining Changes in Brain-Behavior Relations

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.10 - What are the major differences between the HAROLD, CRUNCH, and STAC models?

*KEYWORDS:* Factual

66. The scaffolding theory of cognitive aging (STAC) model suggests that the reason older adults continue to perform at \_\_\_\_\_ levels despite neuronal deterioration is because of compensatory scaffolding.
- a. low
  - b. high
  - c. superior
  - d. unpredictable

*ANSWER:* b

*REFERENCES:* Making Sense of Neuroscience Research: Explaining Changes in Brain-Behavior Relations

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.10 - What are the major differences between the HAROLD, CRUNCH, and STAC models?

*KEYWORDS:* Conceptual

67. Compensation is the brain's response to \_\_\_\_\_.
- a. disease
  - b. deterioration
  - c. inactivity
  - d. injury

*ANSWER:* b

*REFERENCES:* Making Sense of Neuroscience Research: Explaining Changes in Brain-Behavior Relations

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.10 - What are the major differences between the HAROLD, CRUNCH, and STAC models?

*KEYWORDS:* Factual

68. Park and Reuter-Lorenz argue that the integrative approach provided by the STAC model embraces a "lifelong potential for plasticity and the ability to \_\_\_\_\_ age-related changes."
- a. resist
  - b. adapt to
  - c. ignore
  - d. modify

*ANSWER:* b

*REFERENCES:* Making Sense of Neuroscience Research: Explaining Changes in Brain-Behavior Relations

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.10 - What are the major differences between the HAROLD, CRUNCH, and STAC models?

*KEYWORDS:* Conceptual



74. Contrary to a previously held popular belief, \_\_\_\_\_ persist in the adult brain and can regenerate throughout the life span.
- a. synapses
  - b. neurons
  - c. white matter
  - d. neural stem cells

*ANSWER:* d

*REFERENCES:* Neural Plasticity and the Aging Brain

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.11 - What evidence is there for neural plasticity?

*KEYWORDS:* Conceptual

75. The National Human Neural Stem Cell Resource supplies researchers with neural stem cells that are obtained from
- a. umbilical cords.
  - b. postnatal, postmortem human brains.
  - c. mice.
  - d. living humans.

*ANSWER:* b

*REFERENCES:* Neural Plasticity and the Aging Brain

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.11 - What evidence is there for neural plasticity?

*KEYWORDS:* Conceptual

76. Research clearly shows that brain plasticity is enhanced as a result of
- a. online "brain-training" exercises.
  - b. aerobic exercise.
  - c. having parents with high IQs.
  - d. lack of pollution in one's environment.

*ANSWER:* b

*REFERENCES:* Neural Plasticity and the Aging Brain

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.12 - How does aerobic exercise influence brain changes and cognitive activity?

*KEYWORDS:* Factual

77. Erikson and colleagues (2009) were interested in whether aerobic exercise had any effect on the volume of the hippocampus, a key brain structure related to memory. To assess this, they had older adults
- a. play basketball.
  - b. take yoga classes.
  - c. swim laps each day.
  - d. exercise on a motorized treadmill.

*ANSWER:* d

*REFERENCES:* Neural Plasticity and the Aging Brain

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.12 - How does aerobic exercise influence brain changes and cognitive activity?

*KEYWORDS:* Factual

78. Bowman and colleagues (2012) identified three different \_\_\_\_\_ associated with cognitive functioning and brain volume.
- a. biomarker patterns
  - b. genes
  - c. personality types
  - d. types of exercise

*ANSWER:* a

*REFERENCES:* Neural Plasticity and the Aging Brain

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.13 - How does nutrition influence brain changes and cognitive activity?

*KEYWORDS:* Factual

79. Which of the following biomarker patterns was associated with less favorable cognitive functioning and less total cerebral brain volume?

- a. high blood plasma levels of B, C, D, and E
- b. high blood plasma levels of omega-3 fatty acids
- c. the biomarker pattern high in trans fat
- d. the biomarker pattern high in EPA

*ANSWER:* c

*REFERENCES:* Neural Plasticity and the Aging Brain

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.13 - How does nutrition influence brain changes and cognitive activity?

*KEYWORDS:* Factual

80. Given what you have learned about the relationship between nutrition and cognitive functioning over time, what is one piece of advice you could give others?

- a. The research on the relationship between nutrition and cognitive functioning is unclear.
- b. Maintaining good levels of certain nutrients in blood plasma can reduce structural changes in the brain and cognitive declines.
- c. The nutrients important for women's cognitive functioning are different from those required by men.
- d. After age 75, nutrition is not an important factor in cognitive functioning.

*ANSWER:* b

*REFERENCES:* Making Sense of Neuroimaging research: Explaining Changes in Brain-Behavior Relations

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.13 - How does nutrition influence brain changes and cognitive activity?

*KEYWORDS:* Applied

81. Why do we say neuroimaging must be used "carefully and ethically"?

*ANSWER:* Both structural and functional neuroimaging techniques have greatly expanded our understanding of the human brain. We now know more about normative and nonnormative changes over time as well as what areas of the brain age faster and which age slower, or are somewhat immune to the aging process. However, we still don't know definitively which changes are normal and which are not and how these changes may vary by individual. We still need to understand more about how development or progress in one area of functioning may be accompanied by reduced functioning in another area. Finally, we still do not understand all there is to know about individual differences in the structure and function of the brain as we age. What we observe needs to be substantiated by other research. In other words, neuroscience findings must be corroborated by other research to increase their validity.

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Conceptual

82. What are structural imaging techniques best at identifying?

*ANSWER:* X-rays, CT scans, and MRIs are structural imaging techniques. These techniques provide highly detailed pictures of the anatomical features of the brain. As such, they are especially adept at identifying bone fractures, tumors, and other conditions that create structural issues in the brain, such as strokes.

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Factual

83. Discuss the differences between MRI and fMRI.

*ANSWER:* Magnetic resonance imaging (MRI) is a type of structural neuroimaging. It provides an image that looks like a photograph. These pictures document what certain brain structures or regions look like at one point in time. Functional magnetic resonance imaging (fMRI) is a functional neuroimaging technique. These types of techniques give an indication of brain activity but not of the brain anatomy. fMRI is the most commonly used technique in cognitive neuroscience research. A typical fMRI image shows different levels of brain activity using different colors. Therefore, scientists can see which areas of the brain are most active during certain tasks.

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Factual

84. What is the neurocorrelational approach? How does it differ from the neuropsychological approach? Explain.

*ANSWER:* The neurocorrelational method of research examines the relations between measures of cognitive performance and measures of brain structure or functioning. In this method, instead of using direct measures of brain functioning, researchers may use behavioral tests that are associated with the functioning of one brain region or another. The neuropsychological approach, on the other hand, attempts to compare the brain functioning of healthy older adults with the brain functioning of adults showing various brain pathologies. Scientists wish to understand whether changes in certain areas of the brain, due to aging or injury, result in the same types of structural or functional issues. For example, people with damage to the frontal lobe show a decrease in mental processing speed. The same slowing is observed in healthy older adults.

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.02 - What are the main research methods used and issues studied in neuroscience research in adult development and aging?

*KEYWORDS:* Conceptual

85. Discuss the key structural features of a neuron. What is the role of neurotransmitters?

*ANSWER:* The brain is made up of neurons. The dendrites are the component of neurons that receive signals from other nearby neurons. The axons contain neurofibers. These neurofibers carry information inside the neuron from the dendrites to the terminal branches, which are the endpoints of the neuron. Terminal branches release chemicals called neurotransmitters. Because neurons do not touch, it is these neurotransmitters that cross the synapse and are received by the dendrites of next nearby neuron.

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.03 - How is the brain organized structurally?

*KEYWORDS:* Factual

86. What is the default network of the brain and how is it related to poorer performance of cognitive tasks in older adults?

*ANSWER:* The default network of the brain refers to the areas of the brain that are most active when one is at rest and not engaged in any cognitive task. Older individuals have more problems than younger people suppressing this default network. For example, when a younger begins an engaging and challenging cognitive task, the default network is suppressed. Older adults show less suppression, resulting in poorer performance overall. Increased frontal activity in older adults may be one way they work around this lack of suppression.

*REFERENCES:* Making Sense of Neuroimaging Research: Explaining Changes in Brain-Behavior Relations

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.10 - What are the major differences between the HAROLD, CRUNCH, and STAC models?

*KEYWORDS:* Factual

87. Describe plasticity. Are compensatory changes in the elderly an example of plasticity? Does research using neural stem cells support the idea of plasticity?

*ANSWER:* Plasticity in the brain refers to its ability to change in structure and function as a relation of the brain's interaction with the environment. Plasticity refers to brain change or flexibility over time. The fact that research documents that older adults can improve their memories by being trained to use certain strategies in certain circumstances speaks to the brain's ongoing plasticity. Evidence for plasticity is also seen when older adults use bilateral activation. While younger adults use more unilateral activation when working on specific tasks, older adults use more bilateral activation. It appears they are working harder and utilizing more brain structures to optimize their thinking and performance. Finally, it was believed that neurogenesis (the proliferation of neural cells) dwindled with the embryonic period. The finding that neural stem cells exist in adult brains and can generate new neurons throughout the life span speaks to the plasticity of the human brain.

*REFERENCES:* Neural Plasticity and the Aging Brain

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.11 - What evidence is there for neural plasticity?

*KEYWORDS:* Factual

88. Can exercise actually improve one's cognitive skills? Cite examples from research to support.

*ANSWER:* Research clearly shows that brain plasticity is enhanced by aerobic exercise. For example, Erickson and colleagues (2009) were interested in whether aerobic exercise had any effect on the volume of the hippocampus, a brain structure involved in memory. Participants exercised on a treadmill, completed a spatial memory task, and had MRIs to determine hippocampal volume. Results indicated that higher fitness levels were associated with greater hippocampal weights, which in turn were associated with greater performance on the spatial memory task.

*REFERENCES:* Neural Plasticity and the Aging Brain

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.12 - How does aerobic exercise influence brain changes and cognitive activity?

*KEYWORDS:* Conceptual

89. What type of nutrition has been associated with better cognitive functioning and greater brain volume? What type of nutrition has been connected to poorer cognitive outcomes?

*ANSWER:* Certain biomarkers, namely those plasma levels high in B, C, D, and E and those high in omega-3 fatty acids (particularly DHA) were associated with higher cognitive functioning and greater overall brain volume. On the other hand, blood plasma levels high in trans fats were associated with lower cognitive functioning and less total cerebral volume. Overall, the results of these studies indicate that keeping certain levels of specific nutrients in blood plasma enhanced cognitive ability. Researchers are only now beginning to understand the implications of nutrition on cognitive functioning over time. More research is needed in this area to substantiate and expand these findings.

*REFERENCES:* Neural Plasticity and the Aging Brain

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.13 - How does nutrition influence brain changes and cognitive activity?

*KEYWORDS:* Factual

90. What have you learned in this chapter about the ways in which brain deterioration can be slowed or even reversed?

*ANSWER:* Even though there are normative declines in some areas of cognitive abilities in some people over time, such as a decrease in processing speed, there are still a number of things one can do to maintain or increase one's cognitive functioning over time. Eating a healthy diet, exercising, and maintaining one's intellectual activities and interests all are important in maintaining cognitive functioning and health. Having interesting work or hobbies, engaging in conversations with others, learning how to use mnemonic devices, and even doing puzzles and brain teasers all provide mental energy and promote mental flexibility.

*REFERENCES:* Neural Plasticity and the Aging Brain

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.13 - How does nutrition influence brain changes and cognitive activity?

*KEYWORDS:* Factual

91. Researchers now acknowledge that cognitive, social, and emotional change in older adulthood is influenced by changes in the brain at both the \_\_\_\_\_ and \_\_\_\_\_ levels.

*ANSWER:* structural; functional

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Conceptual

92. Bone fractures, tumors, and other conditions that can cause structural damage in the brain are typically detected by the use of \_\_\_\_\_.

*ANSWER:* structural neuroimaging

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Factual

93. The \_\_\_\_\_ approach compares the brain functioning of healthy older adults with adults displaying various pathological brain disorders.

*ANSWER:* neuropsychological

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.01 - What brain imaging techniques are used in neuroscience?

*KEYWORDS:* Factual

94. The neurocorrelational approach attempts to link measures of \_\_\_\_\_ performance to measures of brain \_\_\_\_\_ or functioning.

*ANSWER:* cognitive; structure

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.02 - What are the main research methods used and issues studied in neuroscience research in adult development and aging?

*KEYWORDS:* Conceptual

95. The \_\_\_\_\_ approach allows for real-time investigation of changes in brain function as they affect cognitive performance in older adults.

*ANSWER:* activation-imaging

*REFERENCES:* The Neuroscience Approach

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.02 - What are the main research methods used and issues studied in neuroscience research in adult development and aging?

*KEYWORDS:* Factual

96. Neurotransmitters are chemicals that cross the spaces between neurons. These spaces are called \_\_\_\_\_.

*ANSWER:* synapses

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.03 - How is the brain organized structurally?

*KEYWORDS:* Factual

97. The study of the structure of the brain is called\_\_\_\_\_.

*ANSWER:* neuroanatomy

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.03 - How is the brain organized structurally?

*KEYWORDS:* Factual

98. The\_\_\_\_\_is the outermost part of the brain. It consists of two hemispheres (the right and the left), which are connected by the corpus callosum.

*ANSWER:* cerebral cortex

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.03 - How is the brain organized structurally?

*KEYWORDS:* Factual

99. The method called DTI results in an index of the structural health of\_\_\_\_\_.

*ANSWER:* white matter

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.03 - How is the brain organized structurally?

*KEYWORDS:* Factual

100. Aside from dopamine, serotonin and acetylcholine are two other important\_\_\_\_\_related to cognitive aging.

*ANSWER:* neurotransmitters

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.05 - What changes occur in neurotransmitters as we age?

*KEYWORDS:* Factual

101. There is a decrease in the processing of negative emotional information and an increase in the processing of positive emotional information that occurs with\_\_\_\_\_.

*ANSWER:* age

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.07 - What do age-related structural brain changes mean for behavior?

*KEYWORDS:* Conceptual

102. Even though aging is associated with an overall decrease in the number of new neurons, this differs across\_\_\_\_\_.

*ANSWER:* regions of the brain

*REFERENCES:* Neuroscience and Adult Development and Aging

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.07 - What do age-related structural brain changes mean for behavior?

*KEYWORDS:* Conceptual

103. Older adults compensate for brain changes by \_\_\_\_\_ of the brain than young adults when performing the same tasks.

*ANSWER:* activating more areas

*REFERENCES:* Making Sense of Neuroimaging Research: Explaining Changes in Brain-Behavior Relations

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.09 - How do older adults attempt to compensate for age-related changes in the brain?

*KEYWORDS:* Factual

104. The scaffolding networks used by older adults are \_\_\_\_\_ than the honed, focal ones they used as young adults.

*ANSWER:* less efficient

*REFERENCES:* Making Sense of Neuroimaging Research: Explaining Changes in Brain-Behavior Relations

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.10 - What are the major differences between the HAROLD, CRUNCH, and STAC models?

*KEYWORDS:* Factual

105. Contrary to what was previously thought, \_\_\_\_\_ can regenerate, even in late life, under the right circumstances.

*ANSWER:* brain cells

*REFERENCES:* Neural Plasticity and the Aging Brain

*LEARNING OBJECTIVES:* ADaA.CAVA.15.02.11 - What evidence is there for neural plasticity?

*KEYWORDS:* Factual