

NAME: _____

Ch. 2 NEUROSCIENCE

As you read...

Genetics and Evolutionary Psychology

1. Define Genetics
2. If a trait is 30% _____, then 30% of the differences among a group of people can be attributed to _____.

2-1 Nature and Nurture

3. Define the terms nature and nurture.
4. Discuss how both nature and nurture affects the expression of human traits.
5. Label each of the following statements as being primarily the product of nature, nurture, or both nature and nurture. Remember, all behavior is ultimately the product of both. However, the statements below *emphasize* (in some cases) nature or nurture. They are designed only to give you practice in discriminating between the two components of behavior. If you cannot determine a *primary* influence, "both" is probably the correct answer.
 - A. _____ Unlike most babies, at the age of seven months, Mario said his first word in the language he had been exposed to by his parents.
 - B. _____ Mary has blond hair and is very tall.
 - C. _____ Having lived in China, France, and Italy, Kim can prepare Chinese, French, and Italian meals.
 - D. _____ Donna's level of dopamine is so low that her body trembles most of the time.
 - E. _____ By the age of twelve, Francis was mastering college-level academic material.

2-2 The Basics of Genetics

6. What are Genes?
7. What are Chromosomes?

8. State the differences between a dominant and recessive traits.
9. A _____ is a person's genetic make-up. A _____ is a person's observable characteristics.
10. Unexpected changes in gene replication are called _____.

2-3 Mapping the Genome

11. What is the human genome?
12. What ethical questions does the mapping of the human genome raise?

Brain and Behavior: The Special Case of Twins

13. Discuss how twin studies have revealed information about the contribution of nature and nurture to human behavior.

2-4 Each Human Being is Unique

14. Describe how the field of behavioral genetics uses an understanding of basic biological mechanisms and their relationships to explain behavior.
15. Define Multigenic.

The Research Process: Correlation is Not Causation

16. Compare cause-and-effect relationships to correlated events.
17. A _____ is a number that expresses the degree and direction of a relationship of two variables.

2-5 The Evolutionary Approach to Psychology

18. What is Evolutionary Psychology?
19. Define Natural Selection.
20. _____ has occurred when a trait or inherited characteristic has increased in a population.

Point/Counterpoint: Are Men Naturally Promiscuous?

21. Is there an evolutionary basis for differences in sexual behavior?

Communication and the Nervous System

2-6 The Neuron

1. What is a neuron?
2. Define and compare afferent neurons and efferent neurons.
3. What are the 3 types of neurons?
4. _____ (s) provide nourishment and structure to neurons.
5. What is a myelin sheath and how does it help neurons?
6. List the 4 primary parts of a neuron.
7. Explain the electrochemical process.

Matching

- 1) _____ Action Potential
- 2) _____ Axon
- 3) _____ Central Nervous System
- 4) _____ Dendrite
- 5) _____ Neuron
- 6) _____ Refractory Period
- 7) _____ Synapse

- a) the basic unit of the nervous system
- b) fibers extending from the neuron cell body and receive signals from neighboring cells
- c) small space between neurons
- d) brain and spinal cord
- e) transmits signals from cell body through axon terminal to adjacent neurons
- f) the time a neuron needs to recover after firing
- g) an electrical current that travels down the axon of a neuron

2-7 Neurotransmitters and Behavior

8. What is a neurotransmitter?
9. Compare and contrast EPSP and IPSP
10. List 3 neurotransmitters and how they effect behavior
11. _____ is a neuropeptide that inhibits certain synaptic transmissions involving pain.
12. Define psychopharmacology.
13. Define agonists and antagonists.

Organization of the Nervous System

2-8 The Peripheral Nervous System

1. What are the function and structures of the Peripheral Nervous System
2. List and describe the two subsystems of the peripheral nervous system.
3. Compare and Contrast the sympathetic and parasympathetic nervous systems.
4. Identify the nervous system (central, somatic, parasympathetic, or sympathetic) that is most specifically illustrated by each of the following situations.
 - A. _____ In an effort to shape up, John engages in a series of sit-ups and push-ups.
 - B. _____ Mary, while walking to her psychology class, comes across a large dog who growls at her. Mary notices her heart beating faster and her breathing increased.
 - C. _____ Jane just moved off-campus and must draw up a new budget. She carefully analyzes her assets, her bills, and how she would like to spend the excess after bills.
 - D. _____ An increase in the secretion of digestive juices and blood flowing to the gastrointestinal system causes the meal Simon just ate to break down into protein and carbohydrate molecules and nutrients that are eventually absorbed by his blood system.

2-9 The Central Nervous System

5. What is the function of the Central Nervous System?
6. List and describe the structures of the Central Nervous System.

Brain Organization

2-10 Five Principles Governing Brain Organization

1. What are the five key operating principles of the brain?

2-11 The Brain is Composed of Three Main Divisions

2. What are the 3 main divisions of the brain?

2-12 Hindbrain and Midbrain

3. What functions does the hindbrain perform?
4. List and describe the 4 parts of the hindbrain.
5. What are the functions of the midbrain?

2-13 Forebrain

6. What are the functions and characteristics of the forebrain?
7. Describe the functions of the thalamus and hypothalamus.
8. Define cortex
9. The cortex contains _____ that increase its surface area.
10. List the 4 lobes of the cortex and their locations.
11. What is the limbic system involved in? What structures does it include?
12. _____ is involved in navigating about the world, learning, and memory.

13. _____ is involved in emotional behaviors.
14. Give the location and function of the basal ganglia and corpus callosum.

The Brain at Work

2-14 Monitoring Neuronal Activity

1. List and describe 5 techniques to measure neural function.
2. When people are relaxed, awake, and not actively thinking, their EEG is predominately composed of _____.
3. When a person is excited their EEG is predominately composed of _____.
4. _____ induces lesion-like disruptions in the brain allowing researchers to study attention, plasticity and discrimination.
5. How are imaging techniques currently being used?

2-15 Brain Specialization- The Left and Right of Things

6. Discuss the types of research that have been influential in developing our understanding of brain specialization.
7. Discuss gender differences in the brain.

2-16 Plasticity and Change

8. Define malleable and plasticity. Does the brain demonstrate both of these properties?
9. When is neural plasticity the greatest?

Hormones and Glands

1. Define hormones and compare them to neurotransmitters.
2. What are endocrine glands and give an example.
3. Why is the pituitary gland often called the body's master gland?
4. Complete the following table on the endocrine system.

ENDOCRINE GLAND	HORMONE	EFFECT
	steroid hormones	
pancreas		
	epinephrine (adrenaline)	