**Unit 2: Biological Bases of Behavior**

**8-10% AP Exam Weighting**

The structures of human biological systems and their functions influence our behavior and mental processes. Some psychologists study behaviors and mental processes from a biological perspective. This includes an examination of the influence that the interaction between human biology and our environment has on behavior and mental processes. This is a recurring topic throughout the course that will be used to explain many psychological phenomena. The biological perspective also provides insight into the causes of and treatments for psychological disorders. There is a complex interaction between a person’s biology and their behavior and mental processes. Heredity and environment play a role, as do variations in a person’s consciousness.

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| **Essential Questions:** |
| * How can biology influence our behavior and mental processes? * What happens when a particular neurotransmitter is absent from the body? * How do biological and environmental factors interact to influence our behaviors and mental processes? |

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| **Unit Outline and Learning Targets** |
| **2.1 Interaction of Heredity and Environment-** *Skill: Explain behavior in an authentic context.*   1. Discuss psychology’s abiding interest in how heredity, environment, and evolution work together to shape behavior. 2. Identify key research contributions of scientists in the area of heredity and environment. 3. Predict how traits and behavior can be selected for their adaptive value.   **2.2 The Endocrine System-** *Skill: Define and/or apply concepts.*   1. Discuss the effect of the endocrine system on behavior.   **2.3 Overview of the Nervous System and the Neuron-** *Skill: Define and/or apply concepts.*   1. Describe the nervous system and its subdivisions and functions. 2. Identify basic processes and systems in the biological bases of behavior, including parts of the neuron.   **2.4 Neural Firing-** *Skill: Define and/or apply concepts.*   1. Identify the basic process of transmission of a signal between neurons.   **2.5 Neurotransmitters and Influence of Drugs on Neural Firing-** *Skill: Define and/or apply concepts.*   1. Discuss the influence of neurotransmitters and drugs on behavior   **2.6 The Brain-** *Skill: Define and/or apply concepts.*   1. Describe the nervous system and its subdivisions and functions in the brain. 2. Identify the contributions of key researchers to the study of the brain.   **2.7 Tools for Examining Brain Structure and Function -** *Skill: Analyze and interpret quantitative data.*   1. Recount historic and contemporary research strategies and technologies that support research. 2. Identify the contributions of key researchers to the development of tools for examining the brain.   **2.8 The Adaptable Brain-** *Skill: Define and/or apply concepts.*   1. Discuss the role of neuroplasticity in traumatic brain injury 2. Identify the contributions of key researchers to the study of neuroplasticity 3. Describe various states of consciousness and their impact on behavior 4. Identify the major psychoactive drug categories and classify specific drugs, including their psychological and physiological effects. 5. Discuss drug dependence, addiction, tolerance, and withdrawal. 6. Identify the contributions of major figures in consciousness research.   **2.9 Sleeping and Dreaming-** *Skill: Define and/or apply concepts.*   1. Discuss aspects of sleep and dreaming. |

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| **Vocabulary to Master:** (you should be able to define each of these terms by test day) | | |
| **2.1 Interaction of Heredity and Environment-**  Heritability  Twin Studies  Fraternal Twins  Monozygotic Twins vs. Dizygotic Twins  Temperament  Evolutionary Psychology  **2.2 The Endocrine System**  Hormones  Pituitary Gland  Pineal Gald  Adrenal Gland  Gonads  **2.3 Overview of the Nervous System and the Neuron**  Central nervous system  Peripheral nervous system  Somatic nervous system  Autonomic nervous system  Sympathetic nervous system  Parasympathetic nervous system  **Types of Neurons**  Sensory/Afferent Neurons  Motor/Efferent Neurons  Interneurons  **Parts of the Neuron**  Receptor Sites  Dendrites  Soma (Cell Body)  Axon  Myelin Sheath  Terminal Buttons  Vesicles  Synapse  Glial Cells  **2.4 Neural Firing**  Action Potential (Depolarization)  Repolarization  Resting Potential(Polarization)  Absolute and Relative Refractory Periods  All-or-none Law  Threshold of Excitation  **2.5 Influence of Drugs on Neural Firing**  **Neurotransmitters**  Excitatory vs Inhibitory  Acetylcholine  Serotonin  Dopamine  Norepinephrine  Epinephrine  GABA  Glutamate | Reuptake  Agonist  Antagonist  **2.6 The Brain**  **Brainstem**  Medulla  Pons  Reticular Formation  Cerebellum  Thalamus  **Limbic System**  Hypothalamus  Amygdala  Hippocampus  **Cerebral Cortex**  Frontal lobes  Parietal lobes  Occipital lobes  Temporal lobes  Motor Cortex  Somatosensory Cortex  Brocca’s Area  Wernicke’s Area  Split Brain  Corpus Callosum  **2.7 Tools for Examining Brain Structure and Function** Electroencephalogram (EEG)  CAT Scan  MRI (magnetic resonance imaging)  PET (positron emission tomography) scan  fMRI (functional MRI)  **2.8 The Adaptable Brain**  Neuroplasticity  Neurogenesis  Psychoactive drugs  Tolerance  Addiction  Withdrawal  Physical dependence  Psychological dependence  **Categories of Psychoactive Drugs: include examples of each**  Depressants  Stimulants  Hallucinogens  Consciousness | **2.9 Sleeping and Dreaming**  Circadian rhythms  Sleep cycles  NREM Stages 1-3 (include wave patterns in each)  REM cycle  Sleep spindles  Dreams  Wish Fulfillment  Manifest Content  Latent Content  Activation Synthesis  Information Processing  Sleep disorders: Insomnia  Narcolepsy  Sleep apnea  Night terrors   |  | | --- | | **Key People to Know:** (you should recognize these names and be able to list their contributions to psychology by test day) | | **Charles Darwin**  **Paul Broca**  **Carl Wernicke**  **Roger Sperry**  **Michael Gazzaniga**  **William James (consciousness)**  **Sigmund Freud (consciousness)** | |