

AP Psychology: Biological Bases of Behavior Notes

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AP Psychology Biological Basis of Behavior: Key Takeaways

Review some key concepts you should study for the AP Psychology exam.

1. Besides the functioning of the brain and nervous system, another biological factor that affects human thought and behavior is genetics. Most human traits, like body shape, introversion, or temper, result from the combined effects of nature (our genetic code) and nurture (the environment where we grow up and live).
2. Neuroanatomy refers to the study of the parts and function of neurons. Neurons are individual nerve cells. These cells make up our entire nervous system, from the brain to the neurons that fire when you stub your toe. Every neuron is made up of discrete parts.
3. We can sense the world because our nervous system brings information from our senses to our brain. Since a neuron fires in only one direction (from dendrite to terminal buttons), our body needs two sets of wires: one to take information to the brain and one to take instructions back from the brain to the muscles.
4. Another part of human biology relevant to psychology is the endocrine system. This is a system of glands that secrete hormones that affect many different biological processes in our bodies. The endocrine system is controlled in the brain by the hypothalamus (discussed more below). The endocrine system is complex, but a few elements of the entire process are especially relevant to psychologists.

AP Psychology Biological Basis of Behavior: Key Terms

Review the following key terms related to AP Psychology's Biological Basis of Behavior unit.

- **Genetic predisposition:** The term genetic predisposition refers to the increased chance of developing a specific trait or condition due to our genetic code. Psychological researchers attempt to determine how much nature and nurture contribute to human traits.

- **Sensory neurons:** Also called “afferent neurons,” sensory neurons take information from the senses to the brain.
- **Interneurons:** Once information reaches the brain or spinal cord, interneurons (also called association neurons) take the messages and send them elsewhere in the brain or on to efferent neurons.
- **Motor neurons:** Motor neurons, or efferent neurons, take information from the brain to the rest of the body.
- **Central nervous system:** The central nervous system (CNS) consists of our brain and spinal cord—all the nerves housed within bone (the skull and vertebrae). The spinal cord is a bundle of nerves that run through the center of the spine. It transmits information from the rest of the body to the brain.
- **Peripheral nervous system:** The peripheral nervous system (PNS) consists of all the nerves in your body that are not part of the central nervous system—that is, all the nerves not encased in bone. The peripheral nervous system is divided into two categories: the somatic and the autonomic nervous systems.
- **Somatic nervous system:** The somatic nervous system controls our voluntary muscle movements. The motor cortex of the brain sends impulses to the somatic nervous system, which controls the muscles that allow us to move.
- **Autonomic nervous system:** The autonomic nervous system controls the automatic functions of our body—our heart, lungs, internal organs, glands, and so on. These nerves control our responses to stress: the fight-or-flight response that prepares our body to respond to a perceived threat.
- **Sympathetic nervous system:** The sympathetic nervous system mobilizes our body to respond to stress. This part of our nervous system carries messages to the control systems of the organs, glands, and muscles that direct our body’s response to stress. This process is sometimes called the fight-or-flight response; it is the warning system of our body.
- **Parasympathetic nervous system:** The parasympathetic nervous system has the opposite job of the sympathetic system. It carries messages to the stress response system that cause many of our body activities to slow down and return the body to homeostasis (its typical level) after a stress response.
- **Functional MRI (fMRI):** fMRI is a technology that combines elements of the MRI and PET scans. An fMRI scan can show details of brain structure with information about

blood flow in the brain, tying brain structure to brain activity during cognitive tasks.

- **Cerebellum:** The cerebellum (located on the bottom rear of the brain) looks like a smaller version of our brain stuck onto the underside of our brain. Cerebellum means “little brain.”
- **Thalamus:** The thalamus is located on top of the brain stem. It is responsible for receiving the sensory signals coming up the spinal cord and sending them to the appropriate areas in the rest of the forebrain.
- **Frontal lobes:** The frontal lobes are large areas of the cerebral cortex located at the top front part of the brain behind the eyes. The anterior or front of the frontal lobe is called the prefrontal cortex and is thought to play a critical role in directing thought processes. It is said to act as the brain’s central executive and is believed to be important in predicting consequences, pursuing goals, maintaining emotional control, and engaging in abstract thought.