Chapter 3

BIOLOGY AND BEHAVIOR

Question: How are messages transmitted by neurons, and what are the functions of the peripheral nervous system?

MESSAGE TRANSMISSION VIA NEURONS

- Messages are sent from the axon terminals of one neuron to the dendrites of other neurons
- Messages travel in one direction and are received by the dendrites and travel through the cell body and the axon to the axon terminals
- From there messages cross synapses to the dendrites of other neurons

Question: How are messages transmitted by neurons, and what are the functions of the peripheral nervous system?

FUNCTIONS OF THE PERIPHERAL NERVOUS SYSTEM

- Responsible for transmitting messages between the central nervous system and all part of the body and is made up of the somatic and autonomic nervous system
- The somatic nervous system transmits sensory messages to the central nervous system
- The autonomic nervous system regulates the body's vital functions such as heartbeat and breathing

Question: What are the major structures of the brain, and what is the function of each structure?

MAJOR STRUCTURES AND FUNCTIONS OF THE BRAIN

- Hindbrain – lower part of the brain involved in many vital functions such as heart rate, respiration and balance
- Midbrain – includes areas that are involved in vision and hearing
- Forebrain – front area of the brain involved in complex functions such as thought and emotion

Question: How do hormones secreted by the major glands of the endocrine system affect the body?

HORMONES AND EFFECT ON THE BODY

- Pituitary Gland – responsible for the secretion of many different hormones that affect various aspects of behavior such as the growth hormone
- Thyroid Gland – produces thyroxin which affects the body's metabolism
- Adrenal Gland – the outer layer of the adrenal gland, or cortex, secretes cortical steroids which increase resistance to stress and promote muscle development

Question: How do hormones secreted by the major glands of the endocrine system affect the body?

HORMONES AND EFFECT ON THE BODY *(continued)*

- Testes and Ovaries – produce the hormones testosterone, estrogen, and progesterone that play an important role in development, development of primary and secondary sex characteristics and have psychological as well as biological effects

Question: What is the role of chromosomes and genes in heredity, and how do psychologists study the role of heredity in determining traits?

ROLE OF CHROMOSOMES AND GENES IN HEREDITY

- Genes are the basic building blocks of heredity and traits are determined by pairs of genes
- Most normal human cells contain 46 hormones which develop particular traits in an individual
- The 23rd pair of chromosomes determines the male or female sex

Question: What is the role of chromosomes and genes in heredity, and how do psychologists study the role of heredity in determining traits?

THE STUDY OF THE ROLE OF HEREDITY

Role of heredity in studies through various types of kinship research such as:

A. Twin Studies – a useful way to learn about nature and nurture

B. Adoptee Studies – provide ways of sorting out the effects of nature and nurture

C. Twins Reared Apart – a way of finding out that twins reared apart share many of the same mannerisms despite their separation

Question: What major areas do biological psychologists study?