Topic 1.1

Interaction of Heredity and Environment

1.1.01 Heredity and the Environment

[1.1.A.1]

Behavior is influenced by both heredity and the environment. **Heredity**, sometimes referred to as nature, is the transfer of genetic material from parent to offspring. Behaviors that result from genetic influences (eg, reflexes) demonstrate the effects of heredity.

The **environment**, sometimes called nurture, comprises all nongenetic influences (eg, parenting, nutrition) on behavior. Behaviors learned from the environment (eg, how to paint) demonstrate environmental influences.

Many traits and behaviors are a result of the interaction between these factors. For example, an individual's height is determined by both the genetic information passed down from their biological parents as well as the influence of their environment, such as the nutrition they received as a child.

1.1.02 The Evolutionary Perspective and Natural Selection

[1.1.A.2]

The theory of **natural selection** describes how traits beneficial to a species' survival are more likely to be passed to subsequent generations.

The environment determines which physical (eg, camouflage coloring) and behavioral (eg, innate fear of predators) traits promote survival and reproduction of a species. With each subsequent generation, beneficial traits (eg, camouflage coloring, innate fear of predators) become more common, allowing the species to adapt to its environment. An example of the process of natural selection is shown in Figure 1.1.

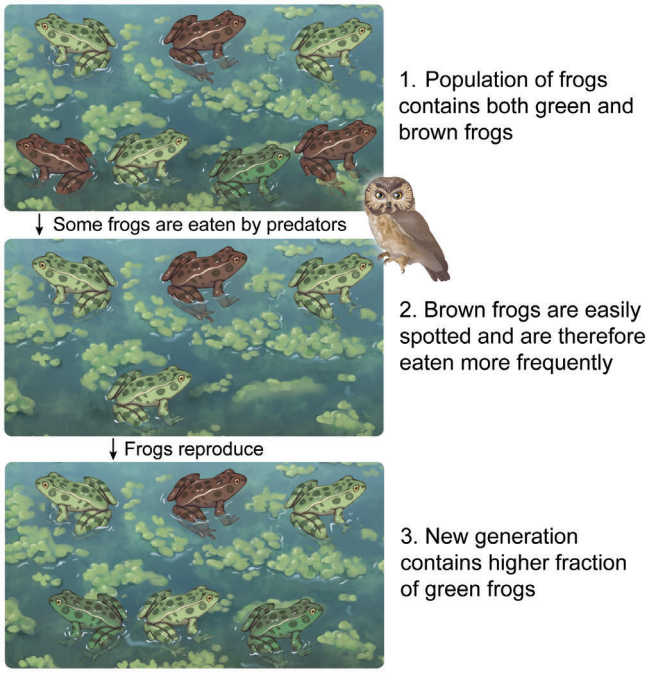

Figure 1.1 The theory of natural selection.

The **evolutionary perspective** (or approach) in psychology emphasizes the impact of natural selection on behavior: traits beneficial to survival (eg, strong bonding between infants and caregivers) are more likely to be passed on to the next generation. For example, an evolutionary psychologist may investigate the role of natural selection in infant and caregiver attachment.

Eugenics

Eugenics is a controversial philosophy that aims to prevent the reproduction of individuals possessing traits seen as disadvantageous (eg, lower intelligence), while encouraging the reproduction of individuals possessing traits seen as advantageous (eg, higher intelligence). Eugenics inspired a number of harmful and discriminatory public policies in the 1900s, such as sterilization laws that targeted individuals with intellectual disabilities.

1.1.03 Research on the Influence of Heredity and the Environment

[1.1.A.3]

Researchers investigate the influence of heredity and the environment using family studies, twin studies, and adoption studies. These studies compare siblings or parents and their children to identify the effects of genetic versus environmental factors on traits or behaviors.

Adopted children share genes with biological parents but an environment with adoptive parents. Researchers can see whether adopted children resemble their biological or adoptive parents more to determine the relative role of genetic (ie, biological parents) or environmental (ie, adoptive parents) influences on behavior. For example, an adopted child resembling their biological parents more in intelligence suggests a stronger genetic influence because adopted children share genes, not an environment, with biological parents.

Although they are rare, twin adoption studies can help further clarify the role of heredity and the environment for complex human traits. Identical twins raised *together* share the same genes and an extremely similar environment (eg, same household, same schools, similar experiences), so it is not possible to determine if similar traits are the result of genetics, environment, or a combination of the two.

However, if identical twins are raised *apart*, traits that they share are most likely determined by genetics, whereas traits that are more similar to those of their adoptive families are most likely determined by environmental influences (see Figure 1.2).

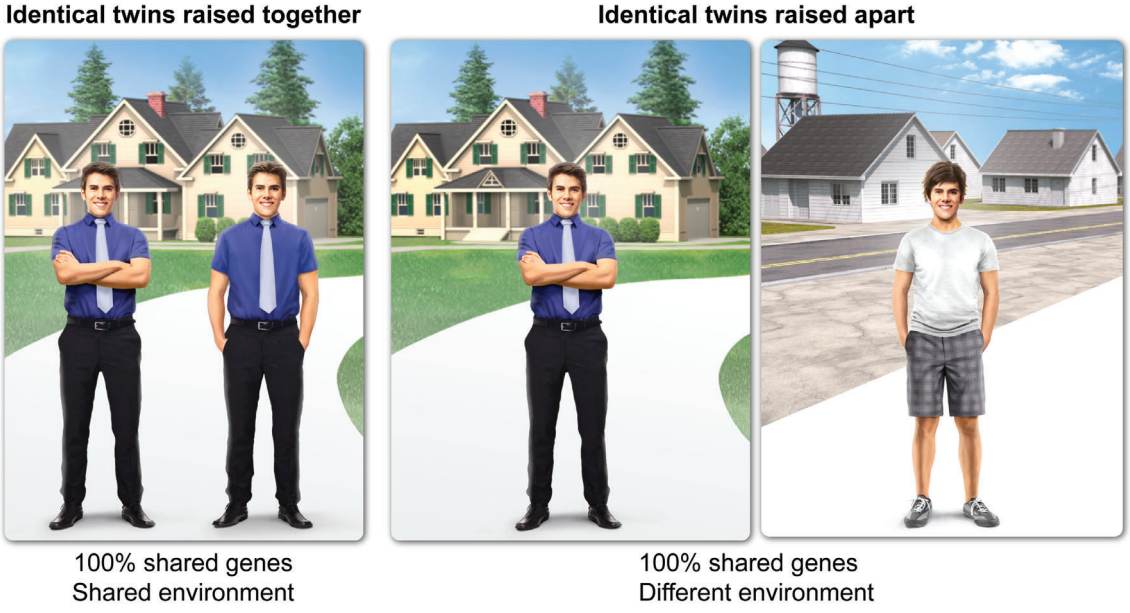

Figure 1.2 Identical twins raised together versus apart.

Topic 1.1 Interaction of Heredity and Environment
Check for Understanding Quiz

1. Behaviors learned from the environment demonstrate the influence of which of the following?
   A. Heredity
   B. Nature
   C. Nurture
   D. Eugenics

2. The theory of natural selection states that
   A. the environment comprises all nongenetic influences on behavior
   B. individuals possessing disadvantageous traits should not reproduce
   C. adopted children share genes with biological parents but an environment with adoptive parents
   D. traits beneficial to a species' survival become more common over generations

Note: Answers to this quiz are in the back of the book (appendix).