

SOLUTIONS MANUAL



DEVELOPMENT

Infancy
Through
Adolescence

Laurence Steinberg | Deborah Lowe Vandell | Marc H. Bornstein
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CHAPTER 2

Nature With Nurture

LEARNING OBJECTIVES

1. Show how scientists' views have changed over time regarding genetic and environmental influences on development.
2. Define heritability. How do studies of twins, adopted children, and blended families help us understand heritability?
3. Describe the current epigenetic view of development.
4. Explain the concept of canalization in genetic expression. Give examples of how evolution has helped select for certain highly canalized traits.
5. Describe what genes are. Discuss their structure, components, and arrangement on chromosomes.
6. Define the words genotype and phenotype. Explain why they might be different in a particular individual.
7. Describe the processes of meiosis and mitosis. Show how meiosis helps to account for the differences between people.
8. Define the concepts of dominant genes, recessive genes, and regulator genes. Give examples of each type of gene.
9. Discuss how your genes may affect your vulnerability to environmental influences.
10. Consider Urie Bronfenbrenner's ecological perspective on human development. Explain why it compares the contexts of development to a series of nested Russian dolls. Give an example of a developmental influence found in your own microsystem, mesosystem, exosystem, and macrosystem. Explain how particular situations or institutions in the different contexts of Bronfenbrenner's model may influence each other.
11. Describe the four main types of interaction between genetic and environmental influences on children's development.
12. Explain the idea of reaction range. Give some examples to demonstrate how reaction range works.

CHAPTER OUTLINE

The map of the **human genome** is like the instruction manual for the human species. With its publication, scientists turned toward the goal of determining which genes influence which characteristics. Genes and environment act in concert, with environment influencing the development of genes as well as genes directly influencing behavior.

I. Nature and Nurture

In studying the role of heredity and environment in development, four main views have emerged: (1) development is driven by nature; (2) development is driven by nurture; (3)

development is part nature, part nurture; and (4) development results from the interaction of nature and nurture. The fourth view is the most recent.

A. Development is Driven by Nature

The idea that characteristics are innate is known as *nativism*.

1. **Preformationism** is the 17th century idea that embryos are preformed—miniature adults with determined anatomy and behavior. It is accompanied by ideas about human nature. For example, Western culture has typically emphasized the belief that people are innately bad via the concept of original sin.
2. Rousseau's Innocent Babes
 - a) Rousseau did not ascribe to preformationism. Rather, he argued that children are innocent at birth and develop according to nature's plan. The environment matters, but not as much as nature, in his view.
 - b) **Genetic determinism** is the idea that human qualities are genetically determined, and unable to be altered by nurture. This belief led to the **eugenics** movement in which some advocated for controlled breeding to produce desirable characteristics and to eliminate undesirable ones by discouraging those individuals with such traits. The Nazis are some of the best known eugenicists. This dark chapter in history led the study of genetic influences to become somewhat disreputable for a number of years.

B. Development is Driven by Nurture

Environmentalists believe that an individual's characteristics are entirely the product of experience.

1. Philosopher John Locke argued that an infant is like a **tabula rasa**, or blank slate. He saw childhood as a formative period in which parents have a responsibility to teach their children. The success, or failure, of the child then, is the product of those experiences.
2. The dominant views on development in the first half of the 20th century—psychoanalytic and behaviorist perspectives—were indeed focused on nurture, not nature. Watson's behaviorism was a revival of Locke's ideas on environmentalism.

C. Development is Part Nature, Part Nurture

In the second half of the 20th century, scientists became dissatisfied with nativism and environmentalism, and began to question how much nature versus nurture contributed to different traits.

1. Developmentalists began calculating the degree to which different traits were influenced by genetic factors—the **heritability** of the trait. These measures are called the heritability quotient of the trait.
2. Studies of heritability employed several designs
 - a) **Twin studies** take advantage of a “natural experiment.” **Identical twins** are compared to **fraternal twins**, and if the identical twins are more similar on a trait than fraternal twins are, then the trait is understood to have a high heritability quotient. Twin studies may also examine twins separated at birth.
 - b) **Adoption studies** examine children raised by individuals other than their birth (or biological) parents. The researchers test to see if the children are more similar to their biological parents than their adoptive parents. If children resemble biological parents more, then it suggests a high heritability quotient for the trait in question.

- c) **Family relatedness studies** examine blended families in which children with different degrees of biological relatedness (e.g., full vs. half vs. step siblings) are raised in the same environment. Individuals raised in blended families usually are more similar to the members to whom they are more closely biologically related.
- 3. Research on heritability has shown that most human traits have a strong heritability component; however, that same research also reveals that the environment influences these traits, as well. For example, full siblings raised in the same environment have a **shared environment**, which may contribute to their similarity even as their similar genes do. Siblings also have a **non-shared environment**, in which they have different friends at school, different teachers, and so forth. Both the nature and the nurture (shared and non-shared) influence human development.
- 4. Heritability studies have been criticized on three main counts: (1) genetic and environmental influences work together (reciprocally); (2) the impact of genes may vary depending on the quality of the environment; and (3) heritability quotients ignore the facts that human traits are malleable, or changeable.
- D. **Development Results from the Interplay of Nature and Nurture**
The contemporary view of development emphasizes the interaction of nature and nurture. More than combination, interaction implies that the result of something is quite different than the initial ingredients.
 - 1. Darwin's **theory of evolution** rests on two main ideas: **survival of the fittest** and **natural selection**. The "fittest" are those organisms best adapted to the situation, which are most likely to survive and then pass on their characteristics. Natural selection is the result of the interplay between a changing environment and the species members. What is adaptive in one environment may not be in the next, so what is most "fit" for survival is changeable.
 - 2. **Epigenesis** is a gradual process of increasing complexity due to interaction between heredity and environment.
 - a) Most developmental scientists ascribe to the idea of development as epigenesis.
 - b) **Stem cells** illustrate epigenesis. Stem cells are primitive, undifferentiated "pre-cells" found in large numbers in an embryo. They can become anything that the body needs. Some will specialize as brain tissue, others as muscle, and so forth.

II. What Are Genes, and What Do They Do?

The study of genetics focuses on how genes make humans distinct from other species, and how they explain individual differences within humankind.

A. Becoming Human

Walking upright on two feet, or **bipedalism**, is a human trait that results from natural selection.

- 1. **Canalization**, the degree to which an element of development is dictated by the genetic program all humans inherit, is the phenomena that explain why features such as bipedalism are so pervasive in humans.
- 2. One distinctive feature of humans is that we are born "prematurely"—humans are unable to take care of themselves for many years and have prolonged immature appearance and behavior, or **neotony**.
 - a) One reason for this is that humans have evolved to be highly social, and prolonged immaturity promotes social attachments.

- b) Another reason for prolonged neotony is that humans are highly dependent on learning, and immaturity at birth increases receptivity to environmental learning.
- B. Human Diversity
1. **Chromosomes** are long strands of DNA which contain a complete set of instructions for the development of a unique human being. The DNA “double helix” ladder contains four chemical bases: adenine, which always connects with thiamine, and guanine with cytosine. The order of the **base pairs** determines genetic instructions. **Genes**, segments of chromosomes, are the units of heredity that pass from one generation to the next.
 2. The 23 pairs of chromosomes one inherits from his or her parents makes up his or her **genotype**; however, one’s observable appearance and characteristics, or **phenotype**, depends on experience and environment.
 3. During ordinary cell reproduction, or **mitosis**, a cell divides into a copy of itself. Reproductive cells, or **gametes**, are different. They reproduce by **meiosis**. Meiosis—the production of sperm and ova—produces cells with only half of a set of chromosomes. At fertilization, the reproductive cells merge and the chromosomes from the mother’s ovum link with those from the father’s sperm. Each person has two sets of chromosomes and two copies of every gene, called **alleles**.
 4. Some might call development the transformation of a genotype into a phenotype. The sex of a child is determined by the 23rd pair of chromosomes. In the case of **additive heredity**, the child’s phenotype is a mixture of the mother’s and father’s genes. In contrast, **dominant/recessive heredity** is one version of a gene overriding the other. Regulator genes do not directly affect traits, but turn other genes on or off at different points in the life cycle. The environment is an active partner in these genes actions and interactions.
 5. Occasionally, copying errors, or **mutations**, do occur.
- III. The Importance of Context
- A. The Ecological Perspective on Development
- Bronfenbrenner developed a way of thinking about developmental contexts as nested: a child is nested within the immediate context of whomever he/she interacts with, and that context is nested within the community, the community is nested within the region, and so forth.
- B. Applying the Ecological Perspective: Understanding the Hispanic-American Dropout Rate
- Hispanic teenagers are less likely to graduate from high school than individuals from other ethnic groups. Bronfenbrenner’s ecological perspective provides a way to look at this problem from different contextual levels of analysis.
- C. Microsystems
1. A **microsystem** is a setting in which the child interacts with others face-to-face every day (e.g., family, school, day care, etc.). Influences within microsystems are *bidirectional* and relationships within them are *multifaceted*.
 2. At this level of analysis, one could ask if the reason Hispanic teens are less likely to graduate from high school has to do with the parenting style with which they were raised, the quality of the schools they attend, or the level of achievement their friends seek to attain.
- D. The Mesosystem
1. The **mesosystem** refers to the ways in which microsystems are connected. Two types of connections are important. First, events in one setting may affect

behavior in another setting. Secondly, the characteristics in one microsystem may either conflict with or reinforce the experiences had in another microsystem.

2. At this level of analysis, one could ask if the reason Hispanic teens are less likely to graduate from high school has to do with the conflict between values instilled at home (cooperation) and those operating at school (competition).
- E. The Exosystem
1. The **exosystem** comprises the contexts outside the child's immediate, everyday experiences.
 2. At this level of analysis, one could ask if the reason Hispanic teens are less likely to graduate from high school has to do with the nature of the neighborhoods in which they tend to live. Are the neighborhoods more stressed? Are the neighborhoods more populated with individuals dealing with unemployment?
- F. The Macrosystem
1. The **macrosystem** includes the larger forces that define a society at a given point in time. This includes social and cultural values, political and economic conditions, major historical events, and the like.
 2. At this level of analysis, one could ask if the reason Hispanic teens are less likely to graduate from high school has to do with **familism**, which is especially valued in Hispanic cultures and puts pressure on Hispanic children to work to serve their family over working towards their own, individual achievement.
- G. Putting It All Together

Although there is evidence to support each of the explanations above for why Hispanic teens are less likely to graduate from high school, it is most likely that it is due to the cumulative effects of many different aspects of life for Hispanic teens. The value of the ecological perspective is that it provides a framework for looking at multiple contextual influences, at different levels of analysis.

IV. The Interplay Between Genes and Context

- A. Environmental Effects on Gene Expression
1. Until recently, scientists thought that genes contained a fixed set of instructions and operated on set timetables. However, the ways that genes affect development is through the proteins they “instruct” the body to produce – what scientists refer to as **gene expression**. The gene expression depends not just on the instruction code, but also on the context in which the instructions occur.
 2. Manipulating the environment to see what happens to human gene expression is unethical, but has been done with rats. In one study, scientists reared two strains of rats—one group was nurturant mothers, and the other group of rats were not nurturant. The rats born to the “good moms” were less anxious in response to a fearful stimulus, but it was hard to tell if that was because the rats had good genes or favorable experiences. So, scientists transferred rats born to “good moms” to the “bad moms” and vice versa—a practice called **cross-fostering**. The rats with “good genes” that were raised by “bad moms” turned anxious, in spite of their good genes.
- B. Environmental Effects on Heritability
1. The heritability of a trait depends on the environment.
 2. The way in which the environment changes the heritability of a trait is not always the same.
- C. Gene-Environment Interaction
1. How a person's genotype becomes a phenotype depends on **gene-environment interaction**—that is, inherited traits lead to different characteristics in different contexts.

2. The best way to look at inherited traits is as an array of possibilities, not fixed points—what scientists call a **reaction range**.
- D. Gene-Environmental Correlations
1. Genotypes can also have an impact on the environment—that is, the developing child can shape his or her world, just by being who he/she is. These relationships refer to correlation, not necessarily causation.
 2. **Passive gene-environment correlations** result from the fact that parents provide both genes and environments for their children. This correlation is “passive” in that the child doesn’t do anything; both are part of what has been passed down, either through parents’ biology or behavior.
 3. **Evocative gene-environment correlations** result from the fact that genotypically different individuals elicit different responses from their environments. This correlation is “evocative” in that the child evokes a response from others based on how he/she behaves.
 4. **Active gene-environment** correlations occur because children select contexts that they find stimulating and rewarding, a process called **niche-picking**. Children choose to participate in contexts that tend to strengthen the traits that lead them to select those contexts.
 5. The importance of these different types of gene-environment correlations changes over the course of development.

LECTURE AND DISCUSSION TOPICS

Topic 2.1 Eugenics in America

Sir Francis Galton wanted to improve humanity. Influenced by his cousin Charles Darwin’s theory of evolution and the traditional crop selection methods of farmers, he reasoned that we could do the same with our offspring. Through selective breeding, we could (and should) eliminate undesirable qualities and promote greater intelligence, strength, and other desirable traits (Galton, 1865). His idea was called “eugenics,” which means “good genes.”

Many people embraced eugenics. In the United States, it was one of the primary foundations of the intelligence testing movement, led by Goddard, Yerkes, Terman, and others (Gould, 1981). Unfortunately, some people used eugenics to justify harmful activities. For example, intelligence testing was used to claim that members of some races were dramatically superior to members of other races. Psychologist H. H. Goddard and others called for strict immigration quotas on certain “inferior” races, and for selective breeding, forced colonization, and sterilization to eliminate the genes for “feeble-mindedness” (Gould, 1981). In 1927, the United States Supreme Court upheld the forced sterilization of Carrie Buck by the state of Virginia. Justice Holmes argued “three generations of imbeciles are enough” (Gould, 1981, p. 335), maintaining that the state had an abiding interest in the purity of their gene pool, which would override the interests of any particular individual (Buck v. Bell decision). This sterilization law was enforced in Virginia’s mental health facilities until 1972.

Eugenics still influences our educational system. Children are routinely tested for intelligence, and often sorted into classes or groups based on those scores. High-scoring children are targeted for enrichment (“gifted and talented” programs), while others are given the minimal education deemed necessary for their abilities as workers. Although the definition of giftedness now includes talents other than having a high IQ, the idea that some children are inherently more talented than others is still prevalent (Kosslyn & Rosenberg, 2004).

Ask your students about their experiences with IQ testing and eugenic thinking. Many may not realize that IQ tests were among the many measures to which they have been subjected, and will not know how that affected the direction of their educations. Do your students support the basic ideas of eugenics? If not, what sort of changes would they like to see?

References:

Galton, F. (1865). Hereditary talent and character. *Macmillan's Magazine*, 12, 157–166, 318–327.

Gould, S. J. (1981). *The mismeasure of man*. NY: W. W. Norton & Co.

Kosslyn, S. M., & Rosenberg, R. S. (2004). *Psychology: The brain, the person, the world* (2nd ed.). Boston: Pearson Education.

Topic 2.2 The Evolution of Emotions

Charles Darwin (1872/1965) noted that many of our facial expressions seem to exist in all cultures. This made him think that facial expressions might be genetically predetermined, and that they evolved because of their usefulness in interpersonal communication. Another explanation for the evolution of emotions is that they increase our chances of mating or successfully protecting our offspring. Both possibilities would increase the chance that our genes would survive, which is the measure of success in evolutionary terms.

Cross-cultural studies have confirmed Darwin's observations. People in many cultures seem to share six basic emotions: anger, fear, disgust, sadness, happiness, and surprise (Nevid, 2007). Ask your students to speculate about the evolutionary advantage of each emotion. How might they help us reproduce more successfully?

Some points to consider include:

Anger: A good motivator, anger helps in the acquisition of necessities such as food, water, territory, and mating partners. You may wish to talk about the roles of scarcity and competition in evolution.

Fear: Fear might keep you out of trouble. Imagine walking past a dark, mysterious-looking cave and hearing something growl. People with a healthy fear response will run away, while fearless people might take unnecessary risks and be killed before they reproduce.

Disgust: The “euuw, yuck!” response may keep us from eating poisonous or spoiled foods. If you become horribly sick after eating something, you may find it disgusting in the future, which would prompt you to avoid it. (You may wish to review the concept of taste aversion from the learning unit in introductory psychology.)

Sadness: Students often find this one hard to understand. Consider describing it in terms of missing the people to whom you're close. Imagine that you're a hunter in a primitive tribe. You're out with your hunting buddies looking for a fresh mastodon for the tribe's dinner, having a fine old time, drinking and telling the usual stories about your prowess as hunters. Why would you ever want to go back to the tribe? Perhaps because you miss your mate and children. Sadness helps hold the tribe together.

Happiness: Like sadness, happiness can help hold a society together. We all want to spend time with people who make us happy. It can also work in our favor when attracting mates and colleagues. If you can make others happy, they'll want to be with you. (How many personal ads talk about needing a good sense of humor?) In addition, consider how much trouble the average child can be. Unless there were ways in which they made us happy, we might have no reason to

care for them. (So you can show that happiness and sadness may be instrumental in keeping children alive.)

Surprise: This emotion is key in triggering the “fight-or-flight” response (general adaptation syndrome). If a hungry tiger appeared in front of a couple of our early ancestors, the one with the greater capacity to be surprised would likely be the one to survive, as she’d be off and running long before her companion was even ready. (This would be a good time to review the basic concepts involved in general adaptation syndrome, including the functions of the autonomic nervous system and the appropriate parts of the endocrine system.)

References:

Darwin, C. E. (1965). *The expression of emotions in man and animals*. Chicago: University of Chicago Press. (Original work published 1872)

Nevid, J. S. (2007). *Psychology: Concepts and applications*. Boston: Houghton Mifflin.

Topic 2.3 Perspective Effects

Why can’t scientists just pick the “correct” perspective on development and discard the others?

One way to see how our differing theories matter is to investigate their practical effects on child rearing. For example, let’s look at how different perspectives on intelligence guide parents.

Some people believe that children inherit their intelligence from their parents, and that they’re born with a certain level of smartness that will never change. Some children get a lot of intelligence from their parents, others not so much. Other people believe that the development of intelligence is entirely governed by a child’s environment, and that genetics plays a minimal role in development. How do these views affect the ways in which people raise their children?

Those who believe that intelligence is purely genetic might conclude that:

- Only certain children can benefit from a good education. Those children deserve the best. Conversely, children at the low end of the intelligence scale can’t take advantage of the opportunity and could legitimately be denied enriching activities.
- You’ve got it or you don’t—hard work won’t make much difference in academic achievement. Ironically, this idea can damage the motivation of children at both extremes of the intelligence scale. Told that they cannot change their inherit talents, they have little reason to make the effort to improve.
- Schools should sort children by intellectual level to prepare each child for an appropriate place in society. Schooling should resemble the work of a jewelry factory, in which gems are sorted, processed, and packaged based on their inherent qualities. Efficiency matters and can easily be demonstrated with statistical descriptions of the students’ progress.

Such beliefs have directed public education in the United States. You may wish to discuss educational policies that were influenced by the IQ testing movement and the ideas of such researchers as Goddard and Terman. Gardner’s theory of multiple intelligences may be seen as another example of this perspective on intelligence.

Those who believe that intelligence is determined by the child’s environment might conclude that:

- Measuring achievement is more important than measuring IQ.

- All children should be required to put forth more effort. They would be taught that achievement is a result of hard work, not talent. This should raise children’s achievement motivation.
- We should develop teaching methods that help children advance from their current levels of academic achievement to higher levels in appropriate steps.
- Schooling should resemble the work of individual artists working with different materials to create new forms of expression. Individuality should be prized. System-wide statistics would not have much meaning in such a paradigm. Effectiveness might be measured by looking at students’ knowledge or abilities before and after their years of instruction.

Ask your students to reflect on their own schooling and how it might have been influenced by ideas of nature and nurture. Class discussion can also branch out onto non-academic subjects, such as belief in talent vs. hard work in music, painting, dance, or other arts.

Topic 2.4 No Child Left Behind

When the No Child Left Behind Act of 2001 (NCLB), was enacted, it mandated that all elementary school students would achieve proficiency in the language arts and mathematics. Among its many provisions, the law mandates the annual use of tests in reading and math in grades 3–8, and one-time tests, in grades 10, 11, or 12, beginning in 2005. Testing in the sciences began in the 2007–2008 school year. Clear timelines were mandated for improving student achievement, with specific benchmarks used to ensure accountability. Schools that don’t meet their annual benchmarks are listed as “needing improvement.”

Introduce your students to the basic ideas and requirements of NCLB. Then review the different philosophies of child development discussed in the text. Be sure to mention the ideas of the Puritans, Jean Jacques Rousseau, John Locke, the behaviorists (John B. Watson and B. F. Skinner), Jean Piaget, and Urie Bronfenbrenner.

Lead the class in a discussion to determine which of these philosophies might have contributed to the development of NCLB. Be sure they can defend their responses!

Finally, ask them to reimagine the law had it been drafted by some of the other philosophers mentioned. How might it be different? What might remain the same?

For more information:

The Center for Public Education (n.d.) *A guide to the no child left behind act*. Retrieved from http://www.centerforpubliceducation.org/site/c.kjXJ5MPIwE/b.1505669/k.D349/A_guide_to_the_No_Child_Left_Behind_Act.htm

U.S. Department of Education. (n.d.) *No child left behind*. Retrieved from <http://www.ed.gov/nclb/landing.jhtml>

Topic 2.5 Humans as Primates

In his book, *The Illustrated Naked Ape*, the zoologist Desmond Morris (1967) looks at humans as if we were simply the 193rd species of primate discovered on Earth. He points out many similarities between us and our primate cousins in our feeding methods, sexual practices, child rearing styles, and proclivities for exploration and fighting. As he notes, in many ways we seem to be just another ape. This is also born out by the genetic evidence linking us to the other primates, as Diamond (2006) notes in *The Third Chimpanzee*.

Discuss some of the similarities between humans and other primates with your students. Have them describe ways in which humans are like other animals, and ways in which we are unique.

References:

Diamond, J. M. (2006). *The third chimpanzee: The evolution and future of the human animal*. NY: HarperCollins Publishers.

Morris, D. (1967). *The illustrated naked ape: A zoologist's study of the human animal*. NY: Crown Publishers.

Topic 2.6 The Nature and Nurture of Brain Development

Many years ago, it was believed that a person's brain cells formed throughout their early childhood and then stopped developing. More recently, researchers have found evidence that neurons in the brain continue to develop, and even to multiply, at much later stages of life.

Early research in this area found that old rats that have been placed in a stimulating environment develop many new synapses per square inch of the brain (Black, Jones, Nelson, & Greenough, 1998; Diamond, Rosenzweig, Bennett, Lindner, & Lyon, 1972; Greenough, Black, & Wallace, 1987; Nelson, 1999), while those who never experience these new environments do not. This implies that human brains should also flourish in enriching situations.

After introducing your class to this information, begin a discussion about what people can do at different ages to promote healthy brain development and growth. Ask your students what sorts of activities might be best for infants, toddlers, school-age children, adolescents, young adults, and older adults.

One interesting way to do this might be to split your class into groups. Ask each group to develop a program for a specific age range. Have each group present their thoughts to the class after a few minutes of in-class discussion.

You may also use this as an out-of-class, critical thinking activity. Have the student groups research products that claim to encourage brain development for their assigned age range (e.g. *Baby Einstein* DVDs for infants, or special brain teasers for the elderly). Do they feel that these products are worthwhile? What evidence can they show?

References:

Black, J. E., Jones, T. A., Nelson, C. A., & Greenough, W. T. (1998). Neuronal plasticity and the developing brain. In N. E. Alessi, J. T. Coyle, S. I. Harrison, & S. Eth (Eds.) *Handbook of child and adolescent psychiatry: Vol. 6. Basic psychiatric science and treatment* (pp. 31–53). NY: Wiley.

Diamond, M. C., Rosenzweig, M. R., Bennett, E. L., Lindner, B., & Lyon, L. (1972). Effects of environmental enrichment and impoverishment on rat cerebral cortex. *Journal of Neural Biology*, 3, 47–64.

Greenough, W. T., Black, J. e., & Wallace, C. S. (1987). Experience and brain development. *Child Development*, 58, 539–559.

Nelson, C. A. (1999). Human plasticity and human development. *Current Directions in Psychological Science*, 8, 42–45.

Topic 2.7 Childhood, Instinct, and Education

Some researchers suggest there's a negative correlation between instinct and the length of time a species spends in childhood. This means that a longer childhood is required to make up for a lack of instincts and inborn capabilities. For example, the average trout doesn't require much in the way of an extended childhood for education. As soon as it's hatched, it knows how to swim and is able to get around on its own. It identifies small moving objects as likely food and larger moving objects as likely predators, and behaves accordingly. Kittens aren't as capable of taking care of themselves at birth, so they have a more extended childhood of a few weeks during which their mothers teach them the basics of hunting, grooming, and socializing.

Human babies have a much longer childhood. They require several years of care and education (some people say as much as 20 to 30 years) before they're ready to venture out on their own.

Discuss these ideas with your class. What other examples can they provide? How might evolution have contributed to the differing lengths of childhood in various species? Might we have gained some evolutionary advantage from our longer childhood? What might that be?

Topic 2.8 Using the Ecological Perspective

In chapter two, the textbook uses Bronfenbrenner's ecological perspective as a way to analyze the problem of the low high school graduation rates of Hispanic-American students. Help your class to apply this model to another common developmental problem, childhood obesity.

According to the United States Centers for Disease Control and Prevention (2007a), there has been a tremendous rise in childhood obesity between the years 1980 and 2004. This is illustrated in the chart below:

	Overweight children in 1980	Overweight children in 2004
Children ages 2–5	5%	13.9%
Children ages 6–11	6.5%	18.8%
Children ages 12–19	5%	17.4%

This is a disturbing trend with serious implications for our children's future health. Being overweight or obese has been linked to high blood pressure, osteoarthritis, type-2 diabetes, coronary heart disease, stroke, sleep apnea, and many other problems that might occur later in life (CDC, 2007b).

Ask your students to explain the contexts of children's environments as defined by Bronfenbrenner's ecological perspective. Have them list the components of these children's:

- Microsystem
- Mesosystem
- Exosystem
- And macrosystem

Next, have your students speculate about what they might change in each of these contexts to reduce the problem of childhood obesity in our society.

References:

Centers for Disease Control and Prevention. (2007a). *Overweight prevalence*. Retrieved from <http://www.cdc.gov/print.do?url=http%3A%2F%2Fwww.cdc.gov%2Fnccdphp%2Fdnpa%2Fobesity%2Fchildhood%2Fprevalence.htm>

Centers for Disease Control and Prevention. (2007b). *Overweight and obesity: Health consequences*. Retrieved from <http://www.cdc.gov/nccdphp/dnpa/obesity/consequences.htm>

Topic 2.9 Using the Behavioral Perspective

Behaviorism has had a relatively short but very strong place in the science of psychology. Help your class apply this model to a common developmental problem, childhood obesity.

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Ask your students to explain possible behavioral causes of childhood weight gain. How can the ideas of reward and punishment explain children's obesity? Next, have your students speculate about how they might design a behavioral approach to reduce the problem of childhood obesity in our society.

References:

Centers for Disease Control and Prevention. (2007a). *Overweight prevalence*. Retrieved from <http://www.cdc.gov/print.do?url=http%3A%2F%2Fwww.cdc.gov%2Fnccdphp%2Fdnpa%2Fobesity%2Fchildhood%2Fprevalence.htm>

Centers for Disease Control and Prevention. (2007b). *Overweight and obesity: Health consequences*. Retrieved from <http://www.cdc.gov/nccdphp/dnpa/obesity/consequences.htm>

STUDENT ACTIVITIES

Activity 2.1 Handling Bad Behavior

Divide your students into four teams, each representing one of the basic philosophies of development described at the beginning of the chapter. Give each team one of the worksheets below. Ask them to analyze a set of problems according to their assigned philosophy.

Things to look for in their responses:

Puritans: The responses should reflect the preformationist idea that children are born in sin, and need punishment to correct their natural sinful natures.

Followers of Rousseau: Responses from this team should reflect the basic preformationist idea that children are born in a state of natural innocence. If their behavior is problematic, it's because they were taught to be bad. Corrections should take the form of returning them to their natural state of grace.

Followers of Locke: This team's responses should include the idea of the *tabula rasa*: children are born with no inclinations toward either good or bad; their behaviors are a result of what they have been taught. (This is somewhat like Rousseau's philosophy.) However, having become what they are, there is likely no easy way to return them to goodness.

Behaviorists: Answers from this group ought to discuss the ideas of reinforcement and punishment. Students may write about shaping, if they remember that term from their introductory psychology course.

Student Activity Handout 2.1a Handling Bad Behavior (Puritans)

You are working as a child development specialist for a group of Puritans in the late 17th century. Several parents have asked for help with problem children. Based on Puritan beliefs, explain the causes of each child's behavior. Then write a prescription for what the parents can do to correct each child's behavioral problem.

Child #1: Joshua is a bully. He often pushes other children around, steals their possessions, and terrorizes the younger ones.

Child #2: Bathsua is a wasteful little girl. She will use something once and then throw it away, even though it might be used many times. She has no regard for the cost or value of anything, and often leaves quite a mess behind her.

Child #3: Jethro doesn't pay attention in school and will not study at home. He's not learning as he should be.

Student Activity Handout 2.1b Handling Bad Behavior (Rousseau)

You are working as a child development specialist in 18th century France, under the direction of Jean Jacques Rousseau. Several parents have asked for help with problem children. Explain the causes of each child's behavior, based on Rousseau's philosophy. Then write a prescription for what the parents can do to correct each child's behavioral problem.

Child #1: Jean-Luc is a bully. He often pushes other children around, steals their possessions, and terrorizes the younger ones.

Child #2: Marie-Claire is a wasteful little girl. She will use something once and then throw it away, even though it might be used many times. She has no regard for the cost or value of anything, and often leaves quite a mess behind her.

Child #3: Sophie doesn't pay attention in school and will not study at home. She's not learning as she should be.

Student Activity Handout 2.1c Handling Bad Behavior (Locke)

You are working as a child development specialist in 17th century England, under the direction of John Locke. Several parents have asked for help with problem children. Explain the causes of each child's behavior, based on Locke's philosophy. Then write a prescription for what the parents can do to correct each child's behavioral problem.

Child #1: Elfreda is a bully. She often pushes other children around, steals their possessions, and terrorizes the younger ones.

Child #2: Stuart is a wasteful little boy. He will use something once and then throw it away, even though it might be used many times. He has no regard for the cost or value of anything, and often leaves quite a mess behind him.

Child #3: Cecil doesn't pay attention in school and will not study at home. He's not learning as he should be.

Student Activity Handout 2.1d Handling Bad Behavior (Behaviorists)

You are a behavioral psychologist working as a child development specialist in 20th century America, under the direction of B. F. Skinner. Several parents have asked for help with problem children. Explain the causes of each child's behavior, based on your behaviorist perspective. Then write a prescription for what the parents can do to correct each child's behavioral problem.

Child #1: Boris is a bully. He often pushes other children around, steals their possessions, and terrorizes the younger ones.

Child #2: Leilani is a wasteful little girl. She will use something once and then throw it away, even though it might be used many times. She has no regard for the cost or value of anything, and often leaves quite a mess behind her.

Child #3: Athena doesn't pay attention in school and will not study at home. She's not learning as she should be.

Activity 2.2 Bronfenbrenner's Ecological Perspective & You

Urie Bronfenbrenner's ecological perspective on development looks at the world of a developing child as a set of interlocking contexts. Think about your own life, and list some of the things that a developmental psychologist would find in each of your contexts.

- List some of the elements of your microsystem (settings in which you interact face-to-face with others).
- What are some of the elements of your mesosystem? (This describes the ways in which your microsystems are interconnected.)
- Describe the aspects of your exosystem (such elements as your neighborhood and your parents' workplaces).
- Finally, explain some of the details of your macrosystem (such things as your culture and the historical events that happened during your life).
- What impacts have the elements of your macrosystem and exosystem had on your life?

Activity 2.3 Eugenics Debate

Divide your students into three groups: affirmative debaters, negative debaters, and judges.

The groups will debate the following resolution:

- Because the biological sciences may make it possible to identify specific genes for certain diseases and debilitating conditions;
- and it may be possible to rectify these conditions using genetic engineering techniques;
- and it's important to reduce human suffering and improve people's lives whenever possible; then
- Be it resolved that biological and medical scientists should use genetic engineering techniques to correct any genetic diseases or debilitating conditions in future generations.

Give each group 1–2 weeks to prepare their arguments, and have an in-class debate on this topic. In a large class, you may have two groups of volunteers for the affirmative and negative debaters, and use the rest of the class as judges; or you may divide the class into several debate teams and groups of judges to do this exercise outside of class and report back on it.

One useful format for the debate is to follow the Karl Popper style of debate, recommended by the International Debate Educational Association (n.d.):

Speech	Time	Speaker	Answering
Affirmative Constructive Argument	6 minutes	affirmative team member # 1	
1 st Negative Cross-Examination	3 minutes	negative team member # 3	affirmative team member # 1
Negative Constructive Argument	6 minutes	negative team member # 1	
1 st Affirmative Cross-Examination	3 minutes	affirmative team member # 3	negative team member # 1

Affirmative Rebuttal	5 minutes	affirmative team member # 2	
2 nd Negative Cross-Examination	3 minutes	negative team member # 1	affirmative team member # 2
Negative Rebuttal	5 minutes	negative team member # 2	
2 nd Affirmative Cross-Examination	3 minutes	affirmative team member # 1	negative team member # 2
Affirmative Rebuttal	5 minutes	affirmative team member # 3	
Negative Rebuttal	5 minutes	negative team member # 3	

The specific content of each of the rounds is available on the IDEA website at:
<http://www.idebate.org/standards/ruleskarlpopper.php>

References:

International Debate Education Association. (n.d.). *IDEA standards: Karl Popper debate*. Retrieved from <http://www.idebate.org/standards/ruleskarlpopper.php>

Activity 2.4a Proverbs

We've all gotten a lot of advice from people over the years. Often that advice comes in the form of proverbs or aphorisms, wise sayings that tell us how to act in different situations. Many of these proverbs can be used to remind your students about current research in human development.

Recall the different philosophies of child development discussed in chapter 2. Then look at the following list of proverbs from several different countries, and write down which of these philosophies might have given rise to each. (A chart for use by your students follows.)

Student Activity Handout 2.4a: Proverbs

Proverb:	Philosophy:
The apple doesn't fall far from the tree.	Puritans
Adversity is a good teacher.	Locke or Behaviorists
Once burned, twice shy.	Locke or Behaviorists
You're never too old to learn.	Locke or Behaviorists
You can't teach an old dog new tricks.	Rousseau
You have to learn to walk before you can run.	Locke or Behaviorists
No pain, no gain.	Puritans
Wonder is the beginning of wisdom.	Rousseau
Spare the rod and spoil the child.	Puritans
Better late than never.	Locke or Behaviorists
Everyone is kneaded out of the same dough, but not baked in the same oven.	Locke or Behaviorists
As you sow, so shall you reap.	Locke or Behaviorists
Praise the young and they will blossom.	Rousseau
The gem cannot be polished without friction, nor the man perfected without trials.	Puritans
The nail that sticks up will be hammered down.	Puritans
The leopard cannot change his spots.	Rousseau
Children should be seen, not heard.	Puritans
You live, you learn.	Locke or Behaviorists
As the twig is bent, so grows the tree.	Locke or Behaviorists
To each, his own.	Rousseau

Activity 2.4b Proverbs

We've all gotten a lot of advice from people over the years. Often that advice comes in the form of proverbs or aphorisms, wise sayings that tell us how to act in different situations. Many of these proverbs can be used to remind your students about current research in human development.

Recall the different philosophies of child development discussed in chapter 2. Then look at the following list of proverbs from several different countries, and write down which of these philosophies might have given rise to each.

Student Activity Handout 2.4b: Proverbs

Proverb:	Philosophy:
The apple doesn't fall far from the tree.	
Adversity is a good teacher.	
Once burned, twice shy.	
You're never too old to learn.	
You can't teach an old dog new tricks.	
You have to learn to walk before you can run.	
No pain, no gain.	
Wonder is the beginning of wisdom.	
Spare the rod and spoil the child.	
Better late than never.	
Everyone is kneaded out of the same dough, but not baked in the same oven.	
As you sow, so shall you reap.	
Praise the young and they will blossom.	
The gem cannot be polished without friction, nor the man perfected without trials.	
The nail that sticks up will be hammered down.	
The leopard cannot change his spots.	
Children should be seen, not heard.	
You live, you learn.	
As the twig is bent, so grows the tree.	
To each, his own.	

Activity 2.5 Role Models

Albert Bandura's social learning theory explains that children learn by watching and imitating the actions of other people (role models). If this is true, then we should be able to determine how some children learned many of their behaviors, and how we can change situations to produce more desirable behaviors.

Imagine that you're a child development specialist working under the supervision of Albert Bandura. Based on what you know about observational learning, what would you advise the following parents to do?

1. Anura has a 2-year-old daughter, and wants her to love to read books.
2. Orpheus wants to encourage his 3-year-old son to excel in art or music.
3. Sharna and Bronislaw are about to have a child, and want to be sure that their little one will be ecologically responsible, i.e. recycle, use energy wisely, and not spend a lot of money on frivolous things that will just be thrown away when they're still good.

Activity 2.6 Effects of Culture

Many parents need to leave their children in day care facilities while they work. As you know from your reading, the culture in which children are raised has a major impact on their development.

Analyze the following day-care situations, and describe some of the outcomes you might expect for each child. What difference might each child's age make in these situations?

1. Seigmund is in a day-care center run by members of his strict, insular, moralistic culture. The staff is very particular about doing things the right way. They have no contact with other cultures, and there is no television or radio, but the children do hear the music of their culture and participate in appropriate fun activities.
2. Aleshanee is in a day-care center with other children from her own culture. The staff is strict, and very particular about doing things the right way. There is access to some educational television shows, such as *Sesame Street* and *Blue's Clues*. Occasionally the children are taken to museums, art shows, or community performances.
3. Guillermo is in a day-care center at the local university. The parents of these children are faculty and staff members of the university, and have come from every part of the world. Children have open access to many different cultural traditions, and learn songs and play games from all over the world.