chapter 2

THEORIES OF DEVELOPMENT

2.1 What do child development theories tell us?

2.2 What are the hypotheses and modern applications of the major child development theories?

2.3 What are neuropsychology and behavioral genetics?

2.4 How does culture influence theories of child development?

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Chapter 2: Theories of Development

TEST YOUR KNOWLEDGE

Test your knowledge of child development by deciding whether each of the following statements is true or false, and then check your answers as you read the chapter.

1. T □ F □: Research cannot tell us whether a theory is true or false.
2. T □ F □: The bulk of your personality is fixed and established by the time you enter adolescence.
3. T □ F □: Freud’s theory is based on outdated ideas so it is not relevant to the field of child development today.
4. T □ F □: The best way to establish and maintain a behavior is to reward people every time they exhibit the behavior that you are interested in.
5. T □ F □: The best way to stop an undesirable behavior in a child is to punish a child for doing it.
6. T □ F □: Children can learn basic math concepts better through games of pick-up sticks and group-based arithmetic games than paper-and-pencil lessons.
7. T □ F □: Darwin’s concept of the “survival of the fittest” means that the strongest animal is most likely to survive.
8. T □ F □: Infants must have skin-to-skin contact with their mother within the first few hours after birth for bonding, or love, to develop.
9. T □ F □: The best way to study children is through carefully controlled experiments in a laboratory setting.
10. T □ F □: A good theory should be universal, applying to all children in all situations.


When we observe and work with children and adolescents, we want to make sense out of what we see. The explanations that we develop about why children behave in certain ways become theories. In this chapter, we describe why we need theories to guide our work with children. We then describe some of the basic characteristics of different theories, such as whether children develop through small incremental steps or through large leaps. We next discuss some of the major theories that have influenced how we understand child development today. Some of these theories have their origins in the late 19th or early 20th century, but each also has modern applications that we have included in this chapter. Because no theory is a static “truth” that never changes, we will see how ideas about children and adolescents have developed over time in response to society’s changes. We will also look at new research providing evidence that either supports or refutes theoretical ideas. We present these theories here as a broad introduction to the variety of ideas that lie behind modern research and practice with children; however, you will read much more about these theories as they are applied to specific topics discussed in the rest of this book.
Why do we need to have a theory in order to understand children? In this section, we discuss this question and then describe two ways in which developmental theories differ in their explanations of how children grow and change.

WHY THEORIES OF DEVELOPMENT ARE IMPORTANT

To advance our understanding of why and how children develop the way they do, it is not enough simply to observe children. When we systematize and organize the ideas that come from those observations, we develop a model that allows us to predict how children will behave in the future. This model is called a developmental theory. Although we all have our own personal theories about various aspects of human behavior, the theories that we use to build a scientific understanding about child and adolescent development must be public and testable. Theories in any science serve two important functions: They help us organize the knowledge that we already have and they help us make predictions that we then can investigate and test.

For example, a parent might react very differently to an infant’s continual crying depending on his understanding of what this crying means. If he subscribes to the theory of behaviorism, he might believe that picking up the crying baby will reward that behavior and make the baby cry more in the future. However, if he subscribes to the theory of ethology, he might believe that crying is a behavior that signals the baby needs comfort and if that need is met, the baby will eventually cry less.

Now that we have stated opposing theoretical ideas, we can examine research that tests those ideas. St. James-Roberts (2007) reviewed research on two types of parenting: demand parenting, in which babies were reliably picked up when they cried (based upon an ethological approach), and structured parenting, in which standard bedtimes and routines were put in place and some crying was acceptable (based upon a behavioral approach). (Note that no one simply left babies to cry uncontrollably!) In his review, St. James-Roberts found evidence that supports each of these theoretical ideas. Demand parenting resulted in babies crying less during the first 3 months of life but continuing to cry at night after that age. This supports the idea that quickly responding to a crying infant meets the infant’s needs, as ethological theory would suggest. However structured parenting resulted in more crying during the first 3 months but reduced crying at night thereafter. This supports the idea from behavioral theory that responding quickly will establish a pattern that reinforces the crying itself. As we see in this example, the answers to questions based on theories are often not a clear yes or no. Instead, they point the way to further questions that we can examine through further research. St. James-Roberts and colleagues used the results of these research findings to develop an intervention program to help improve infant sleep (Hiscock et al., 2014).

As this research suggests, most theories can never be proven beyond a shadow of any doubt, but the scientific process does allow us to gather evidence that supports or opposes the truth of these ideas. For example, some say Darwin’s theory of evolution is not a proven fact, and technically this is true. However, the enormous body of evidence that supports its ideas outweighs the evidence against it. Consequently, evolutionary theory is widely accepted in scientific circles today. On the other hand, other theories have come and gone as evidence piled up that did not fit with the predictions they made. For example, at one time, we thought inadequate early mothering was the cause of the severe mental illness known as schizophrenia (Ambert, 1997), but as research continued, it became clear that the more
likely culprit in the development of schizophrenia is a combination of genetic endowment and environmental influence (Boksa, 2008). As our understanding advanced, the theory that mothers’ behavior was the cause for this mental disorder disappeared.

**HOW DO DEVELOPMENTAL THEORIES DIFFER?**

As you will remember from Chapter 1, development has to do with both stability and change over time, so each developmental theory must address the issues of how and why change happens and why some aspects of behavior remain the same.

**How Does Change Happen?**

As we saw in Chapter 1, some theories describe development as a series of quantitative changes that happen little by little, smoothly over time, such as growing physically inch by inch. Other theories describe development as a series of qualitative changes that occur at certain ages and alter the nature of the child or adolescent in significant ways. These qualitative theories are called stage theories, because each stage in life is seen as different from the ones that come before and after. One way to understand the difference between the two types of change is to consider the development of memory. Children can remember more and more as they get older (quantitative change), but they may suddenly increase their memory capacity when they develop a new way of encoding information into memory (qualitative change).

**Why Does Change Happen?**

Developmental change may be driven by biological processes inside each person, by environmental events that affect each person, or by an interaction of the two. Development is also affected by the way we make sense out of our experiences. One of the important ways developmental theories differ from each other is the relative weight they attach to internal and external influences on development. In the next section, we describe some of the central theories that have been influential in our thinking about children’s development. As you read about each theory, keep two questions in mind:

1. How does the theory describe development? Does change occur quantitatively, in small steps, or qualitatively, in distinct stages?
2. What drives development? Is development the product of biological processes, environmental influences, or a combination of both?

**CHECK YOUR UNDERSTANDING**

1. What two functions do theories serve in science?
2. What is the relationship between theory and truth?
3. What are two ways in which theories of development differ from each other?

**THEORIES OF CHILD AND ADOLESCENT DEVELOPMENT**

**2.2 What are the hypotheses and modern applications of the major child development theories?**

As we begin this description of developmental theories, it is important for you to understand that theoretical ideas do not exist in a vacuum. Leading theorists developed their ideas while living and participating in a particular culture at a particular point in historical time, and
their ideas about child development reflect these influences. However, each of these theories has been tested over time, retaining the concepts and principles that continue to be useful, and losing or changing those that don’t. In different ways, each of these theories has helped to shape the type of questions we ask, the type of research we conduct, and the interpretation we place on our findings.

**PSYCHOANALYTIC THEORY**

We begin our discussion of theories with psychoanalytic theory (psyche = the mind; analysis = looking at the parts of the mind individually to see how they relate) because it was the first theory to describe stages of development through childhood. In this theory, developed by Sigmund Freud (1856–1939), biological urges move each person through a series of stages that shape the personality. Although psychoanalytic theory has been very controversial throughout its existence, many of its concepts have become part of our assumptions about how the mind works. Furthermore, Freud has been recognized as one of the 100 most influential people of the 20th century (Gay, 1999).

Freud theorized that our personality is made up of three parts: the id, the ego, and the superego. According to Freud, we are all born with an id, which consists of our basic instinctual drives. Infants have no way to control their desires. They want what they want when they want it. An infant is not going to wait politely for you to get off the phone when she is feeling very hungry. She is going to cry and demand food because she has a strong need to satisfy this basic drive. The id operates on what Freud called the pleasure principle because it seeks immediate gratification for all its urges.

As children grow older, they begin to become aware of the reality of the world around them and begin to develop the ability to think and control their emotions. This ability to negotiate between basic drives and the real world is the job of the ego. As the ego develops, the child is still motivated by her basic drives, but she now is able to interact in the real world to get her needs met. Even though she is hungry, she now realizes that if she waits until her father is off the phone and asks politely, she may be more likely to get the cookie she wants. This way of dealing with our wants and desires is known as the reality principle.

Finally, sometime between the ages of 5 and 7, the child begins to incorporate moral principles that work against the drive–motivated functioning of the id. These moral principles are maintained by the superego. Freud believed that children do not have any internal sense of guilt that guides their actions until they develop a superego. Whereas a younger child might simply take a cookie when hungry, an older child will be able to control herself and resist the temptation because she knows that taking a cookie when she isn’t supposed to is wrong. Figure 2.1 illustrates how the id, ego, and superego function.

**Sigmund Freud’s Psychosexual Stages**

Freud believed our most basic drive is the sex drive. If you believe that biologically the goal of our lives is to pass on our genes, then you might agree with Freud that the sex drive is central to everything else. Along with this, Freud believed that many of our thoughts and feelings about sexuality are hidden in our unconscious mind, the part of our mind of which we are unaware. He outlined five stages in child and adolescent development, which he called psychosexual stages. At each of these stages, sexual energy is invested in a different part of the body, and gratification of the urges associated with those areas of the body is particularly pleasurable. He labeled these stages the oral, anal, phallic, latency, and genital stages. He believed that the way in which gratification of urges is handled during each of these stages determines the nature of an adult’s personality and character. Satisfying the urges at each stage allows the individual to positively resolve the needs of that stage and to move on to the next. On the other hand, failing to meet one’s needs in any of the stages can result in psychological disturbance in adulthood. We next describe these stages and Freud’s ideas about the effects later in life if development during these stages does not go well.

**Psychoanalytic theory** Freud’s theory in which the way we deal with biological urges moves us through a series of stages that shape our personalities.

**Id** According to psychoanalytic theory, the part of personality that consists of the basic drives, such as sex and hunger.

**Pleasure principle** The idea that the id seeks immediate gratification for all of its urges to feel pleasure.

**Ego** The part of the personality that contains with the reality of the world and controls the basic drives.

**Reality principle** The psychoanalytic concept that the ego has the ability to deal with the real world and not just drives and fantasy.

**Superego** Freud’s concept of the conscience or sense of right and wrong.

**Unconscious mind** The part of the mind that contains thoughts and feelings about which we are unaware.

**Psychosexual stages** Freud’s idea that at each stage sexual energy is invested in a different part of the body.
The oral stage lasts from birth to about 18 months of age. Children in the oral stage derive a great deal of satisfaction from activities that stimulate their mouth, lips, or tongue. This is why young children often immediately put anything they get their hands on into their mouth. Freud developed the idea that someone can get “stuck” or fixated in one of the first three psychosexual stages during early childhood. A child can get fixated if his needs are not adequately met at a stage or if he receives so much gratification that he is not willing to move on to the next stage. Later in life, that person will then exhibit characteristics of the stage he fixated on (Freud, 1953). For example, an individual who is fixated in the oral stage may want to continue to try to satisfy his oral urges by overeating or smoking. Many of us have some remnants of this stage as we chew on our fingers or pencils; however, a fixation is really only a concern when it interferes with adaptive functioning in some critical way.

The anal stage lasts from 18 months to 3 years. At this age the pleasure center moves to the anus, and issues of toilet training become central. Although many of us squirm to think of the anus as a pleasure center, we have only to listen to the "poopy talk" of young children to see the hilarity it brings about. The task of the child at this age is to learn to control his bodily urges to conform to society’s expectations. A person who is fixated at this stage may become overcontrolled (referred to as anal compulsive) as an adult (Freud, 1959). For this person, everything must be in its proper place to an extreme degree. Conversely, someone might become anal explosive, creating "messes" wherever he goes.

The phallic stage lasts from 3 to 6 years of age. Sexual energy becomes focused on the genitals. Boys and girls develop what has been called “the family romance.” Boys imagine marrying their mother when they grow up and girls imagine marrying their father. To move on to the next psychosexual stage, children must learn to give up these desires and begin to identify with the parent of the same sex.
The latency stage occurs between 6 and 12 years of age. Latent means inactive, and Freud (1953) believed that during this time the sex drive goes underground. Children move from their fantasies in the phallic period of marrying their parent to a new realization that they must take the long road toward learning to become a grown-up. The sex drive provides energy for the learning that must take place but the drive itself is not expressed overtly. Children transfer their interest from parents to peers (Freud, 1965). At this age, children who had cross-sex friendships often relinquish them as boys and girls learn the meaning of “cooties” and each sex professes disgust for the other.

This separation of the sexes begins to change at about age 12, when young adolescents enter the genital stage. At this point, sexual energy becomes focused on the genital area, and a more mature sexual interest occurs between peers.

Erik Erikson’s Psychosocial Stages

Many followers of Freud further developed aspects of his theory, but one of the most influential was Erik Homburger Erikson (1902–1994). Erikson believed that issues of the ego are more important than those linked with the id and instinctual drives. He believed that the development of identity is the central issue for children and adolescents. At each stage in his theory a conflict arises rooted in the social experiences typical at that stage of development. For this reason, Erikson’s theory is said to describe psychosocial stages (as opposed to Freud’s psychosexual stages). The way in which we resolve the conflict at each stage lays the groundwork for the next stage of our development.

For example, Erikson believed that infants have to establish trust in the world around them, so he called the developmental issue for infants trust versus mistrust. Infants are totally dependent on the adults who care for them. When their caregivers are dependable and reliably meet the infant’s needs, the infant learns to trust the world and feel safe and secure in it. However, when caregivers are inconsistent in providing care or are emotionally unavailable to the infant, she develops a sense of mistrust in the world. These early experiences can color the way the individual approaches social relationships later in development. In a similar way, each subsequent developmental stage presents a different developmental conflict. The way infants resolve the issue of trust versus mistrust sets the stage for the way they will go on to deal with issues of autonomy versus shame and doubt as they become more independent from their parents in the next stage.

Of course none of us have a completely positive or completely negative set of experiences; therefore, we can think of the two possible outcomes of each stage as two sides of a seesaw, with one side higher than the other but both actively in play. For example, we will all have some trust and some mistrust in our relationships; it is the balance of the two that lays the foundation for later development.

The other important aspect of Erikson’s theory is that he believed development does not stop in adolescence. He went beyond Freud’s stages to add three stages of adulthood. He was the first theorist to recognize that we continue to grow and develop throughout our lives. Erikson’s eight psychosocial stages are described briefly in comparison to Freud’s psychosexual stages in Table 2.1. You can use this table to carry out Active Learning: Comparing Psychoanalytic Theories to review these two theories.
Choosing Psychoanalytic Theories

Use Table 2.1 to test your understanding and memory of the stages of Freud and Erikson.

1. Review Freud’s Psychosexual Stages in Columns 2 and 3 to be sure you understand the description of each one.
2. Take a sheet of paper and cover all the columns except Column 1, Ages. Try to recall the name for Freud’s stages that correspond to each age through adolescence.
3. Study Erikson’s Psychosocial Stages in Columns 4 and 5 to understand the issues in each stage.
4. Cover Columns 4 and 5 and try to recall the name of Erikson’s stages that correspond to each of Freud’s stages.
5. Cover all but Column 1 and try to recall both Freud’s and Erikson’s stages that correspond to each age group.

<table>
<thead>
<tr>
<th>Ages</th>
<th>Freud’s Psychosexual Stages</th>
<th>Erikson’s Psychosocial Stages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infancy</td>
<td>Oral</td>
<td>Trust versus mistrust</td>
</tr>
<tr>
<td></td>
<td>Pleasure is focused on the mouth and “taking in.”</td>
<td>Infant develops trust in maternal care and in one’s ability to cope or a sense of hopelessness.</td>
</tr>
<tr>
<td>Toddlerhood</td>
<td>Anal</td>
<td>Autonomy versus shame and doubt</td>
</tr>
<tr>
<td></td>
<td>Pleasure is focused on the anal region and control of one’s own body and its products.</td>
<td>Toddler develops more independence and self-control or a lack of confidence.</td>
</tr>
<tr>
<td>Early Childhood</td>
<td>Phallic</td>
<td>Initiative versus guilt</td>
</tr>
<tr>
<td></td>
<td>Pleasure is focused on the genital area; development of the “family romance.”</td>
<td>Child exhibits exuberant activity or overcontrol.</td>
</tr>
<tr>
<td>Middle Childhood</td>
<td>Latency</td>
<td>Industry versus inferiority</td>
</tr>
<tr>
<td></td>
<td>Sexual energy goes underground as child focuses on peers and learning.</td>
<td>Child learns the tasks of society or develops a sense of inadequacy.</td>
</tr>
<tr>
<td>Adolescence</td>
<td>Genital</td>
<td>Identity versus role confusion</td>
</tr>
<tr>
<td></td>
<td>Sexual energy reaches adult level, with focus on intimate relationships.</td>
<td>Adolescent integrates previous experiences to form an identity or feels confusion about his or her role in society.</td>
</tr>
<tr>
<td>Early Adulthood</td>
<td>Genital</td>
<td>Intimacy versus isolation</td>
</tr>
<tr>
<td></td>
<td>Identity versus role confusion</td>
<td>One develops an ability to form close relationships or fears and avoids relationships.</td>
</tr>
<tr>
<td>Middle Adulthood</td>
<td>Intimacy versus isolation</td>
<td>Generativity versus stagnation</td>
</tr>
<tr>
<td></td>
<td>Identity versus role confusion</td>
<td>One guides the next generation or is preoccupied with one’s own needs.</td>
</tr>
<tr>
<td>Later Adulthood</td>
<td>Ego integrity versus despair</td>
<td>Ego integrity versus despair</td>
</tr>
<tr>
<td></td>
<td>One achieves a sense of meaning in life or feels one’s life has not been worthwhile and fears death.</td>
<td></td>
</tr>
</tbody>
</table>

Sources: Compiled from Kahn (2002) and Erikson (1963).
Modern Applications of Psychoanalytic Theory

Despite the controversy that has surrounded Freud’s psychoanalytic theory, ideas that come from it are still very influential, particularly in relation to the study of the development of mental and emotional disorders (Fonagy, Target, & Gergely, 2006). Many psychotherapists continue to use therapy based on Freud’s idea that inner conflicts from earlier life experiences, especially early trauma, form the basis for later psychological symptoms, and bringing those inner conflicts from the unconscious mind into consciousness will be therapeutic.

Erikson’s ideas about the effect of social experiences on development have influenced contemporary child care practices and our understanding of the way development occurs as a series of interrelated experiences. For instance, we urge new parents to be sensitive and responsive to their infants as a way to establish a sense of trust, as Erikson described. We better understand the challenge of adolescence when we see it as a struggle to establish a coherent sense of individual identity (Meeus, van de Schoot, Kefjers, & Branje, 2012). Erikson’s theoretical ideas have been used in the treatment of children with emotional disturbances to provide a framework for understanding the central issues that children deal with at different ages (Turns & Kimmes, 2014) and as a framework for parenting advice (Fletcher & Branen, n.d.).

Erikson’s ideas also have remained influential because they reflect the way we think about development today, as outlined in Chapter 1. The role Erikson gives to the influence of culture, the environment, and social experiences on development fits well with our current interest in understanding the contexts in which development occurs. His portrayal of the child as an active participant in shaping his or her own development and the incorporation of both change (as reflected in different crises in each of the stages) and stability (as seen in the idea that later stages continue to be influenced by the resolution of earlier issues) also dovetails with our current thinking.

CHECK YOUR UNDERSTANDING

1. What are the three parts of the personality according to Freud?
2. What drive does Freud say is most important for human development?
3. How do the stages in the theories of Freud and Erikson differ?

LEARNING THEORIES

A very different school of thought about how children develop is offered by the learning theories. Whereas psychoanalytic theory focuses on internal processes of the mind, the learning theories focus on observable behavior. These theories are based on the link between the stimulus (an event in the external environment) and the response of the child. In the following sections, we describe the theories known as behaviorism (which is based on principles of classical conditioning and operant conditioning) and social cognitive theory (which is based on principles of modeling and imitation).

John B. Watson and Classical Conditioning

John B. Watson (1878–1958) is the father of the theory known as behaviorism. Unlike other psychologists in the early 1900s, he was not interested in studying the impact of internal factors such as genetic influences and the workings of the mind on human development.
(Buckley, 1989). Instead, he concentrated on what he could see: behavior, or what people do. The modern academic field of psychology was just emerging, and psychologists in America were trying hard to establish the field as an experimental science, with testable predictions based on observable phenomena rather than unseen concepts such as Freud’s unconscious mind.

Watson studied the ways in which the environment influences human behavior. He subscribed to a notion put forth by great philosophers including Aristotle and John Locke that we are born a “blank slate” or *tabula rasa*, ready to be drawn on by environmental experiences. He felt so strongly about this that he made the following statement:

> Give me a dozen healthy infants, well-formed, and my own specified world to bring them up in and I’ll guarantee to take any one at random and train him to become any type of specialist I might select—doctor, lawyer, artist, merchant-chief and, yes, even beggar-man and thief, regardless of his talents, penchants, tendencies, abilities, vocations, and race of his ancestors. I am going beyond my facts and I admit it, but so have the advocates of the contrary and they have been doing it for many thousands of years. (Watson, 1928, p. 104)

One way in which we learn from our environment, according to Watson, is through a process called **classical conditioning**, illustrated in Figure 2.2. In this process, a particular stimulus or event in the environment is paired with another stimulus over and over again. The first stimulus, known as the *unconditioned stimulus*, provokes a natural response, known as the *unconditioned response*. For example, Ivan Pavlov (1849–1936), a Russian physiologist who was studying reflexes and the processes of digestion, presented food to hungry dogs in his lab. In response, the dogs salivated, just as you would if you were hungry and walked by a bakery. The food is the unconditioned stimulus because it elicits a natural or unconditioned response (UCR). The unconditioned stimulus is repeatedly presented just after the neutral stimulus. The unconditioned stimulus continues to produce an unconditioned response.

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**Figure 2.2**

**Classical conditioning.** This figure shows the steps in the process of classical conditioning.

**BEFORE CONDITIONING**

An unconditioned stimulus (UCS) produces an unconditioned response (UCR).

**DURING CONDITIONING**

The unconditioned stimulus is repeatedly presented just after the neutral stimulus. The unconditioned stimulus continues to produce an unconditioned response.

**AFTER CONDITIONING**

The neutral stimulus alone now produces a conditioned response (CR), thereby becoming a conditioned stimulus (CS).
response, salivation. Then Pavlov made a distinctive noise, such as ringing a bell, immediately before he presented the food. At first the bell did not provoke salivation from the dogs, so it was considered a neutral stimulus. However, over time, as Pavlov continued to ring the bell before presenting the food, the dogs began to associate the sound of the bell with the food, so the animals had learned something about the bell, and it now became a conditioned stimulus. Finally, Pavlov presented only the bell and found that the dogs continued to salivate just as if the food had been presented. Salivation to a formerly neutral stimulus, such as the ringing of a bell, is known as a conditioned response (Pavlov, 1927).

In a well-known experiment with a 9-month-old infant known only as Little Albert, Watson applied the idea of classical conditioning by demonstrating that he could use it to condition fear in a human infant (Watson & Rayner, 1920). (Clearly, this type of research would be considered unethical today and would not be conducted unless strict safeguards were implemented to assure the infant’s safety and well-being.) Watson found that Little Albert, like many infants, was frightened by a sudden loud sound so the noise was an unconditioned stimulus and would bring about fear as an unconditioned response. When Watson first showed Little Albert a white rat, the child was curious but not afraid of the animal, so the rat was initially a neutral stimulus because it did not produce a fear response. However, Watson then made the loud clanging noise at the same time that he presented the white rat to the infant. He did this numerous times over a number of days, and Little Albert soon began to cry as soon as he saw the white rat. Eventually Watson stopped making the loud sound, and yet every time he showed Little Albert the white rat, which by now had become a conditioned stimulus, the infant continued to show fear, which now was a conditioned, or learned, response.

Aside from the obvious ethical questions about conducting research like this with an infant, there are also many questions about the scientific quality and meaning of the research that Watson carried out with Little Albert. Other people who subsequently carried out this type of classical conditioning with other infants were unable to replicate the results that Watson had described (e.g., Bregman, 1934). Even in Watson and Rayner’s (1920) own description, there were times when Little Albert did not show much fear of the rat or of the other stimuli such as a rabbit and a dog to which he supposedly had generalized his fear.

Despite questions about Watson’s experiment, classical conditioning has become an accepted principle of learning. It’s easy to think of examples in everyday life. A child who gets sick after eating asparagus may later find that just seeing asparagus makes him feel queasy. The sick feeling has become classically conditioned to the sight of that vegetable. On the other hand, a child who visits fast food restaurants may associate that type of food with the fun she has at the play areas provided and subsequently crave that food (Petrovich & Gallagher, 2007). To check whether you understand the steps of the classical conditioning process, try Active Learning: Understanding the Process of Classical Conditioning.

**Active Learning**

**Understanding the Process of Classical Conditioning**

Read the following paragraph and then answer the questions below.

Every time your roommate leaves the room he says “Goodbye!” and loudly slams the door, making you flinch. After this happens a number of times, your roommate says to you “Gotta go now. Goodbye!” and you realize that you are flinching even before you hear the door slam. Can you identify all the elements in this classical conditioning paradigm listed below?
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Unconditioned stimulus (the stimulus that naturally is tied to a response that you can’t control):

Unconditioned response (the response that is automatic):

Conditioned stimulus (the stimulus that is paired with the unconditioned stimulus):

Conditioned response (the response you have learned):

Classical conditioning has been used to explain phobias, the irrational fear of something specific that is so severe that it interferes with day-to-day functioning. Think of things in your everyday environment that could elicit a phobic response. They include dark places (nyc-tophobia), spiders (arachnophobia), snakes (ophidiophobia), and great heights (acrophobia). From an evolutionary perspective, it makes sense that humans have an instinctual fear of things that could harm or even kill them. These fears are so strong that even things associated with them that could not possibly harm you can elicit the fear response. For example, if you have a snake phobia, you might refuse to go outdoors because there could be a snake lurking there. One of the dangers of this type of learning is that once the conditioned (or learned) response has been established, people understandably avoid the stimulus that produces the unpleasant response so they don’t have the opportunity to find out that they really have nothing to fear.

Modem Applications of Classical Conditioning

Modern psychologists have used classical conditioning to treat phobias by exposing patients to their feared situations in a controlled way. This idea began long ago when Mary Cover Jones (1924) followed Watson’s experiment with Little Albert with a study of a 2-year-old boy who seemed to have the exact phobias of rats, rabbits, and other objects that Watson claimed he had conditioned into Little Albert. Jones was able to undo these fears.
by deconditioning the child; she presented him with candy at the same time a rabbit was brought to him and encouraged imitation when he saw another child holding the rabbit. Today people who are being deconditioned are first trained in relaxation techniques. Next they are exposed to the object or situation they fear in a series of gradual steps from least frightening to most frightening, and they use their relaxation techniques to reduce their anxiety at each step.

More recently, virtual reality therapy, a technique that uses computer simulation of real interactive environments, has been used for treating children with anxiety disorders to expose them to feared stimuli in a gradual way that they can tolerate. Although the amount of research on this approach has been limited, it has been shown to be helpful for children with school phobias and phobias of spiders (Bouchard, 2011; Bouchard, Weiderhold, & Bossé, 2014).

B. F. Skinner and Operant Conditioning

B. F. Skinner (1904–1990) further developed the theory of behaviorism by introducing the idea of operant conditioning. While studying rat behavior at Harvard, he noticed that the rats were affected not by what came before their behavior, as was true of classical conditioning, but by what came after (Vargas, 2005). He concluded that spontaneous behaviors are controlled by the environment’s response to them.

In the vocabulary of operant conditioning, a reinforcement is anything that follows a behavior and increases the likelihood that the behavior will continue or happen again. Reinforcement can be planned, like the candies some parents give to toddlers when they use the potty, or unplanned, like nodding and smiling when someone is talking to you. As long as you smile and nod, the person is likely to continue to talk with you because he finds the way you are responding to him pleasant and rewarding. Positive reinforcement occurs when you get something you like and want. It is easy to think of examples of positive reinforcement: a gold star on a good paper, getting your allowance for keeping your room clean, or watching your favorite TV program after you have finished studying for your upcoming test. Negative reinforcement occurs when something disagreeable is removed. You can think of the word negative as a minus sign, taking something away, rather than as something bad.

Do you wear your seat belt when you drive? You should simply because it helps keep you safe, but car manufacturers weren’t sure that was enough of an incentive, so they installed an obnoxious buzzer that won’t turn off until you buckle your belt. Getting away from that annoying sound is an example of negative reinforcement. Buckling your seat belt is reinforced and, therefore, likely to increase when the annoying sound goes away. Please note that both positive and negative reinforcement cause a behavior to happen more. Figure 2.3 illustrates the comparison between positive reinforcement and negative reinforcement.

Skinner described several concepts related to reinforcement that help us understand how the process works. One is the process of shaping behavior. Obviously you can’t reinforce a behavior if that behavior doesn’t occur, so shaping is a way that lets you build that behavior in a series of steps. For example, you cannot reinforce positive peer interaction with a child who does not interact with his peers. However, Skinner developed the idea, based on his work with pigeons, that behavior could slowly be “shaped” through reinforcement of behaviors that progressively get more and more like the behaviors desired. In this way he was able to train pigeons to engage in complex behaviors like playing ping-pong. To use shaping with a child who does not interact with peers, you could begin by rewarding the child when the child is simply near another child. The next step might be that the child is reinforced only when he looks at the other child, and finally the reinforcement might only be provided when he speaks while looking at the child. Eventually, the reward would be contingent only on true interaction with a peer.

The effects of reinforcement. Many people spend hours at casino slot machines. The fact that they win often but not every time makes this behavior very persistent.
Positive Reinforcement

Positive reinforcement makes a behavior more likely to continue. Awarding a trophy for academic performance will make it more likely that this boy will continue to work hard in school.

Negative Reinforcement

Negative reinforcement also makes a behavior more likely to continue. Listening to a crying baby is difficult. When this mother finds that holding her baby stops the crying she is likely to continue to hold her baby.

If reinforcement increases the likelihood that a behavior will occur, you might think that the most effective way to establish and maintain a behavior would be to reinforce a child every time she performs that behavior. However, although continual reinforcement does a great job of establishing a behavior, when the reinforcement stops the behavior is likely to stop as well. Skinner found that less frequent reinforcement is more effective for maintaining a behavior. Imagine that you found a slot machine that gave you a payoff each time you pulled the handle. You would quickly learn to keep putting coins into that machine. But what if the machine then suddenly stopped paying off? How quickly would you abandon this behavior that never produced a reward? That is why games of chance reward you in an unpredictable way. They keep you motivated to continue playing in the hope that the next try will produce a big reward. Now think about how you would study if you knew you were going to have a quiz that would give you points toward your final grade every 2 weeks. Compare that to how your study habits would change if you knew you would have quizzes but didn’t know when they would be given. Which schedule would result in more consistent study habits? With regularly scheduled quizzes, you may be likely to cram all of your studying in a day before the exam. However, if your reinforcement for getting a good grade
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depends on “pop quizzes” that are unpredictable, your best strategy is to study at a steady pace so you are always ready.

You can test the effects of reinforcement by trying Active Learning: Reward Yourself!

Active LEARNING

Reward Yourself!

Of course you already know that reading your textbook helps boost your grades (and presumably increases your learning). Although grades themselves are a form of reinforcement, they are quite long-term, and many people need a more immediate reinforcer to do what is needed to achieve them. If you are someone who does not stay current with your class readings, set up a reinforcement program for yourself. First, keep track of how many pages of reading you are currently doing in a week. Next, choose a reward you know to be effective for you and keep track of your progress when you consistently reward your reading. For example, see how many pages you should be reading during a given week. For every 5 or 10 pages that you read, give yourself a treat, such as listening to one or two of your favorite songs. Again, keep track of the number of pages you are reading during a week. Did you end up reading more when you gave yourself a reinforcement that depended upon your behavior?

If reinforcement increases the likelihood of a response, punishment is intended to decrease it. Punishment consists of administering an undesirable consequence (such as a spanking) or taking away a desired consequence (such as “no dessert because you didn’t eat your dinner”) in response to an unwanted behavior. However, Skinner (1953) believed that a more effective way to control behavior is to ignore undesirable behavior rather than punish it. This is a process that Skinner called extinction. People don’t usually continue doing something that has no reward or payoff for them. As the undesirable behavior decreases, alternative desired behavior should be rewarded so it replaces the undesirable one. For example, a teacher might ignore a squabble between two children (thereby denying them attention from the teacher) but later compliment them on their positive play behaviors. As the time spent in positive play increases, there should be less and less opportunity for squabbling. Figure 2.4 illustrates the comparison between extinction and two types of punishment.

One reason why punishment doesn’t always work the way we expect it to is because what we consider punishment may be something different for the child. For example, a child may be looking for any response from a parent; therefore, even yelling or spanking may unintentionally reinforce the undesirable behavior because the child is getting the parental attention that she wants. You will read more about the problems associated with the use of punishment in Chapter 13.

Modern Applications of Operant Conditioning

Operant conditioning has been used as a classroom management strategy for many years. Students may be given tokens, stickers, or checkmarks on a classroom chart to reward good behavior. At some point these tokens can be redeemed for gifts, privileges, or special activities (Landrum & Kauffman, 2006). An approach called applied behavior analysis (ABA) uses operant conditioning techniques with children in special populations, particularly those with autism spectrum disorder, to increase adaptive behavior and decrease maladaptive behavior (Myers & Plauche Johnson, 2007).
ABA begins when therapists observe children to determine the reinforcements that are helping to maintain undesirable behavior, a process called functional behavioral assessment (Anderson, Rodriguez, & Campbell, 2015). Next the therapist will identify the problematic behavior and note where, when, and how often it occurs and then identify the rewards or reinforcements the child is getting from this behavior. See Figure 2.5 for an example of a chart used in this process. The therapist sets a new goal and implements changes to work
toward that goal. This could involve ignoring the problematic behavior or punishing it, if necessary, while rewarding an alternative desired behavior in its place (Neitzel & Bogin, 2008). For example, a child might be annoying peers in a classroom because it gets him sent to detention where he doesn’t have to do his class work. In this case, the way this behavior was being dealt with was unintentionally rewarding the misbehavior by getting the student out of doing his work. The intervention might be that the classroom teacher ignores the misbehavior whenever possible so the behavior isn’t reinforced or there are negative consequences for it, such as being required to do something else the child doesn’t like to do when he is not doing his class work. At the same time, the child would receive reinforcement for appropriate behaviors, such as when the child is paying attention to his work. This procedure has been used successfully with autistic children to improve IQ, language, and sociability (Lablanc, Richardson, & McIntosh, 2005; Simpson et al., 2005), as well as to reduce behavioral problems in children with multiple disabilities (O’Mea, 2013).

Albert Bandura and Social Cognitive Theory

Albert Bandura, who was originally trained as a behaviorist, was dissatisfied with some of the ideas that grew out of behaviorism because it is difficult or impossible to identify either stimuli or reinforcements for the entire range of human behavior we see (Pajares & Schunk, 2002). Bandura proposed that, in addition to classical and operant conditioning, we learn through imitation. He believed that people can learn new behaviors simply by watching others rather than by receiving direct reinforcement of their own behaviors from the environment (Bandura, 1986). With these ideas, he had returned to the view, rejected by both Watson and Skinner, that internal mental processes (cognition) play an important role in human learning and human behavior. For this reason, he called his theory a social cognitive learning theory because the learning occurs from watching other people (social) but is also processed in one’s mind (cognitive).

According to Bandura, imitation has four parts: (1) attention to a model, (2) mental representation or memory of that model’s actions, (3) motoric ability to reproduce the action, and (4) the motivation to imitate the action (Grusec, 1992). Let’s rephrase that to help you...
better understand the process: You need to notice what someone else is doing (attention) and then be able to remember what you saw (mental representation) and actually be able to do the same thing yourself (motoric response) if or when you want to (motivation). If all these conditions are in place, you will be able to repeat or imitate the behavior that you saw someone else model.

Bandura’s earliest work was designed to show how children learn by direct observation. In his classic experiment, one group of children observed an adult on television act aggressively to a Bobo doll (a large inflated figure of a clown that is weighted on the bottom), hitting it, kicking it, throwing it, and striking it with a toy hammer (Bandura, Ross, & Ross, 1963). These children and another group of children who had not seen the video were then brought individually into a room containing the Bobo doll and other toys. The children who had seen the adult attacking the Bobo doll were much more likely to hit, kick, or throw the doll or strike it with a hammer. In contrast, the children who hadn’t seen the adult model attacking the Bobo doll never carried out these aggressive acts. This should not be surprising to anyone who has watched children on a playground doing karate chops like Teenage Mutant Ninja Turtles or other characters they have seen on TV and in movies. Furthermore, Bandura found that the children exposed to the adult model were also aggressive to the doll in ways they had not seen, such as shooting it with a toy gun. Bandura concluded that observation of a model may provoke a more generalized response based on the children’s cognitive understanding of what was happening. In this case, they saw the adult hit the Bobo doll, but they also understood that the general idea was to be aggressive to the doll.

Bandura’s later development of his theory placed greater emphasis on the cognitive, or thinking, aspects of behavior development and specifically on thinking about our own ability to have control in our lives. Over time the name of his theory changed to eliminate learning, because this term was connected with the idea of conditioning, which is associated with environmental control of our behavior. Bandura renamed his theory social cognitive theory to emphasize that thought has social origins but is then processed through our own individual cognitive interpretations.

Social cognitive theory The theory that individuals learn by observing others and imitating their behavior.
Modern Applications of Social Cognitive Theory

The emphasis in social cognitive theory on the role of cognition in determining motivation to perform a behavior has led to Bandura’s more recent research that is focused on **self-efficacy** or “the core belief that one has the power to influence one’s own functioning and life circumstances” (Bandura, Caprara, Barbaranelli, Pastorelli, & Regalia, 2001, p. 125). These beliefs play a crucial role in understanding motivation because they are powerful predictors of which goals we will pursue (Pajares, 2005). We tend to pursue tasks at which we believe we can succeed and to avoid ones at which we believe we will fail. The concept of self-efficacy has found wide applications in a variety of situations that involve people’s decision to make changes in their lives. Health self-efficacy (the belief that you can make decisions or change behaviors that impact your health and well-being) has been associated with positive lifestyle changes in adolescents who are HIV-positive, patients in cardiac rehabilitation, and adults suffering from osteoporosis (Jones, Renger, & Kang, 2007). Coping self-efficacy has been associated with recovery from posttraumatic stress disorder in victims of natural disasters, military combatants, and victims of sexual or criminal assault (Benight & Bandura, 2004). Perhaps the most important application of the idea of self-efficacy has been in the area of education. Students with a sense of self-efficacy work harder and longer at academic tasks, tackle more difficult tasks, and have a greater sense of optimism that they will succeed (Pajares, 2002; Phan & Ngu, 2016).

**CHECK YOUR UNDERSTANDING**

1. According to behaviorism, what is the most important influence on human behavior?
2. How are classical and operant conditioning similar and how are they different?
3. What is the basic learning principle of social cognitive theory?

**THEORIES OF COGNITIVE DEVELOPMENT**

Cognition is a broad term that has to do with processes of the mind, including thinking and learning. In this section, we introduce theories that describe cognitive processes and how they develop. We will examine them further in Chapter 7, where we discuss cognitive development.

**Jean Piaget’s Cognitive Developmental Theory**

Jean Piaget (1896–1980) was a Swiss scientist whose theory has been very influential in the way we think about child development. Like Freud, Piaget was honored by *Time* magazine as one of the 100 most influential people of the 20th century (Papert, 1999). Piaget studied children’s thinking through what he called the clinical method. He encouraged children to talk freely in response to his interview questions and learned about their thoughts from a detailed analysis of what they said (Piaget, 1955/1973).

Piaget believed we are constantly adapting to our environment by organizing the world in ways we can understand. When we take in new information we try to connect it with what we already know; however, when we cannot connect it we change our understanding in order to accommodate the new information. Take the example of a little boy who goes to the zoo and sees an elephant for the first time. He turns to his mother and says, “Look, it’s a big doggy with two tails.” This child has the concept of dog but not elephant so he tries to fit this new experience into one of his existing concepts. He does his best to make sense out of seeing an animal with both a trunk and a tail. Will he always think the elephant is a strange dog? Of course not, because an adult or older child will point out the unique features of elephants, such as their long trunks. The child can now add a new concept, elephant, to what he knows.

Like Freud and Erikson, Piaget believed that children change in qualitative ways from one age period to the next. The stages that he described were based on the way he...
believed children thought about and understood the world at each age level. In his theory, children are not just less knowledgeable than adults; rather, they think in qualitatively different ways at each developmental stage. Piaget described four stages of cognitive development: sensorimotor, preoperational, concrete operations, and formal operations. We describe these stages when we examine Piaget’s theory in more depth in Chapter 7.

**Modern Applications of Piaget’s Theory**

Criticism of Piaget’s theory has focused largely on the methodology he used and his conclusions about when children enter each of the stages in his theory, but his greatest contribution to our understanding of cognitive development may lie in his concept of constructivism (Newcombe, 2011). Piaget understood that we do not operate like video cameras, taking in what is around us passively and indiscriminately. Instead, he believed that we are active learners, always working to construct our understanding of the world. Piaget saw children as being like “little scientists,” always actively experimenting on the world to increase their understanding of it.

Piaget’s ideas have had a great impact on educational practices, taking the focus away from rote learning of facts and instead promoting children’s active approach to constructing their own learning. Many teachers use Piaget’s ideas as the basis for their teaching style (Hinde & Perry, 2007), and research in this area is ongoing. For example, Constance Kamii and her colleagues (Kamii, Rummelsburg, & Kari, 2005) gave low-socioeconomic status, low-achieving students in first grade math-related activities to explore (for example, pick-up sticks and group-based arithmetic games) instead of traditional math assignments (for example, “What is 2 + 2?”). At the end of the year, these students scored higher on tests of mental arithmetic and logical reasoning than did similar students who had received teacher-directed, pencil-and-paper instruction.

**Lev Vygotsky’s Sociocultural Theory**

Lev Semyonovich Vygotsky (1896–1934), a Russian psychologist, had somewhat different ideas about cognitive development. He emphasized the importance of the social world and of culture in promoting cognitive growth, rather than looking at children as independent learners who actively explore the environment on their own (Vygotsky, 1978). According to Vygotsky (1986), learning first takes place in the interaction between people. The individual then internalizes that learning, and it becomes a part of one’s own, independent thinking.

Vygotsky believed that looking at what the child is capable of learning in interaction with a skilled helper is a better indicator of his level of cognitive development than just testing what he already knows. He was more interested in what the child could become than in how the child currently functioned (Wertsch, 1985). He believed the teacher must first determine what a child knows, and stay close to what the child already knows when helping the child take the next step. In Vygotsky’s concept, adults help the “construction” of the child’s understanding by providing guidance and support until they can step back when the child fully understands. For example, if you have a jack-in-the-box and want to play with a 6-month-old baby, you will likely just turn the handle for her and watch her Accommodating new information. This boy might think this elephant is a big dog the first time he sees it, but he will soon learn it is a new type of animal and will accommodate his thinking to include the category of elephant.

**Constructivism**

The idea that humans actively construct their understanding of the world, rather than passively receiving knowledge.

**T  F  F** Children can learn basic math concepts better through games of pick-up sticks and group-based arithmetic games than paper-and-pencil lessons. True
reaction. When the child is 2 years old, you might hold her hand on the handle so she can learn to turn it. When she is 3, you might just give her the toy and watch unless she needed some help like a reminder of what to do. Your input is no longer needed. You will learn more about Vygotsky’s ideas in Chapter 7.

**Modern Applications of Vygotsky’s Theory**

Like Piaget’s theory, Vygotsky’s ideas have had a powerful influence in the field of education. One specific educational practice that developed out of Vygotsky’s ideas is known as **dynamic assessment**. In this approach, instead of testing what a child knows or can do at one particular time, the instructor asks a question to assess the child’s understanding of a concept. When a child answers the question incorrectly, the instructor starts with the most indirect help, such as a suggestion that the child think about whether he has seen a problem like this before. If this help is not enough, the adult will increase the level of direction, potentially ending by giving and explaining the correct answer. Some children will only need the small suggestion, while others need a more direct approach (Poehner, 2007).

Another educational strategy that has grown out of Vygotsky’s theoretical ideas is **collaborative learning**. This occurs when a student works with another person or as a part of a group toward a common goal, such as a project or an assignment. The members of the group usually are at different levels of ability or understanding, and through the process of working together they learn from each other. We discuss this and other educational strategies based on Vygotsky’s theory in more detail in Chapter 8.

**Information Processing**

Whereas Piaget and Vygotsky provide more global concepts about cognition and its development, information processing theory breaks down the way we understand and use information into steps, such as acquiring information, storing it, and retrieving it (Robinson-Riegler & Robinson-Riegler, 2008). The earliest approach to information processing described cognition as a series of linear steps: first we pay attention to something, then we process, or think about it, then we store it in memory where we can later retrieve and use it. This has been referred to as the **stores model** and is based on a view of the mind as similar to a computer. However, the more we learn about cognition, the more complex it appears to be.

A more current model is called the **connectionist or neural network model**. Rather than representing memory or learning as the transfer of information sequentially from one storage box to another, this newer way of thinking about information processing more closely reflects the way that nerve cells (neurons) in the brain operate through multiple simultaneous connections with other neurons throughout the brain. Using this model, information is processed through concept nodes that are interconnected by links (see Figure 2.6). For example, when we see a white duck, different concept nodes may be activated. One node can represent a specific concept (white), one can represent a higher-order concept (duck), and one can represent a superordinate concept (bird) (Robinson-Riegler & Robinson-Riegler, 2008). The concept nodes are analogous to nerve cells in the brain, and the links are connections between individual neurons. When information is stored in memory, it becomes a new node that is connected to other nodes in the network. Although each node is connected in some way to other pieces of information in our memory, the strength of these connections can vary, and learning involves changing the strength of these connections. When input comes into the system (for example, the sight of a bird in flight), certain nodes are activated. If the links between those nodes are strong enough, the output is a concept (in this case, bird).

Information processing theory examines different aspects of cognitive development in detail. Unlike Piaget, who saw qualitative changes occurring in the way children think...
as they move from one stage to another, information processing looks at the gradual development of cognitive processes. For example, we know that children remember more the older they get, but what changes occur in the way they think to allow this to happen? In Chapter 7 you will read about recent research that examines development of attention, memory, and other processes through which we make sense of our world. You will also find related topics throughout the book. For example, the topic of social cognition, or how thinking is applied to social situations, appears in Chapter 12 where we discuss social development.

Modern Applications of Information Processing

Information processing theory has led to an enormous amount of research on growth and changes in cognitive processes during childhood and adolescence. One new development in the study of cognitive development is the ability to link cognitive processes with brain changes through the use of functional and structural imaging technologies. Current technologies allow researchers to link specific cognitive processes with changes in both the structure and the function of the brain and nervous system. This area of study, known as developmental cognitive neuroscience, allows us to understand how the developing brain both promotes and limits certain cognitive abilities. For example, the ability to think in an abstract way, rather than dealing only with the concrete world around us, develops throughout adolescence. Brain imaging studies have shown changes during adolescence in the activation of parts of the brain that deal with aspects of abstract thought (Dumontheil, 2014). Such studies support the idea that the immaturity of the adolescent brain limits cognitive abilities. Therefore, teachers, judges, and others should not expect teens to operate at the same level

**Developmental cognitive neuroscience** The study of the relation between cognitive development and the development of the brain.
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You will learn more about brain development and its relation to cognitive development in Chapters 6 and 7.

CHECK YOUR UNDERSTANDING

1. According to Piaget, how do children construct their knowledge of the world?

2. How does dynamic assessment of children’s abilities differ from traditional types of assessment?

3. How do the stores model and the connectionist model of information processing differ?

EVOLUTIONARY THEORIES

Charles Darwin’s theory of evolution is based on the idea that living things that adapt to their environment, not necessarily the ones that are the biggest or strongest, are more likely to pass on their genes to the next generation. His focus was primarily on physical characteristics, but his basic idea that human behavior that has adaptive value will persist is central to the theories of ethology and sociobiology.

Ethology

Konrad Lorenz (1903–1989) is considered the father of modern ethology, which is the study of the adaptive value of animal and human behavior in the natural environment (Tinbergen, 1963). As a zoologist studying animal behavior in Munich, Germany, Lorenz found that ducks and geese would immediately follow their mothers after they were born. This automatic behavior, called imprinting, is adaptive because the mother provides her offspring with food and protection from predators. If a newborn animal didn’t do this, it would be unlikely the animal would survive to pass along its genes to the next generation. Some researchers attempted to apply the idea of imprinting to human behavior by claiming that infants must have skin-to-skin contact with their mother within the first few hours after birth for bonding, or love, to develop. Like many direct applications of animal behavior to humans, this has turned out not to be the case. Although animal behavior can give us some ideas about human behavior, the direct application of one to the other is usually too simplistic. Although there is no evidence for the concept of bonding in human beings, ethological principles contributed to our understanding of the slower, less automatic development of attachment between infant and mother during the first year of life. You will learn more about attachment in Chapter 10.

For an example of animal behavior that does correspond more clearly to human behavior, see Active Learning: Rough-and-Tumble Play.

Konrad Lorenz and imprinting. Konrad Lorenz observed the behavior of geese (left) and demonstrated the presence of imprinting by removing the mother goose immediately after the babies were born and substituting himself. The goslings then followed him as if he was their mother (right).
Rough-and-Tumble Play

One example of a similarity between animal behavior and human behavior is the existence of rough-and-tumble play, which appears in many species. Rough-and-tumble (R&T) play consists of "vigorous behaviours such as wrestling, grappling, kicking and tumbling that would appear to be aggressive except for the playful context" (Pellegrini & Smith, 1998, p. 579). It is not the same as real aggression because all parties know that the goal is not to hurt anyone. Children often laugh while engaging in R&T play. Children, especially boys, all around the world take part in this type of play (Smith, 2010). If you were an ethologist, how would you explain this behavior? Think about what adaptive value the behavior might have for the participants either at the time that it happens or in the future. Remember your own experiences with rough-and-tumble play to add your own thoughts and feelings to your understanding of the behavior.

Rough-and-tumble play. How would an ethologist explain the presence of rough-and-tumble play in many species and in human societies around the world? How do we know this is play and not real fighting?

Answer:

There have been several ethologically based explanations for rough-and-tumble play. One explanation is that it is practice for later aggressive and defensive behavior in adulthood, because this type of activity develops muscles and endurance (Pellegrini, 1987). Another plausible reason, found more with adolescents than younger children, is that R&T play is used to establish dominance (Fry, 2005; Pellegrini, 2003). Just as chickens develop a "pecking order," teens can use R&T play to find out who is stronger and more skilled without needing to have a real fight.

Sociobiology

In 1975, biologist Edward O. Wilson introduced the field of sociobiology, which examines the role that principles of evolution play in the development of social behavior and culture. One example of what sociobiologists study is the impact of kinship on relationships. According to sociobiology, people are more likely to protect, help, and give to relatives than to other people because they share some of their genes with biological family members, and therefore they have a stake in making sure family members survive to pass on the genes they share (Pollet, 2007).

Modern Applications of Evolutionary Theory

Evolutionary approaches such as ethology and sociobiology have contributed to a newer approach known as evolutionary developmental psychology which applies the principles and

Ethology: The study of the adaptive value of animal and human behavior in the natural environment.

Imprinting: In ethology, the automatic process by which animals attach to their mothers.

Sociobiology: The application of principles of evolution to the development of social behavior and culture.
ideas of evolutionary theory specifically to questions of how and why children develop as they do (Blasi & Bjorklund, 2003; Causey, Gardiner, & Bjorklund, 2008). Ideas taken from evolutionary theory have influenced research on several important topics in the field of child development, including aggression, altruism, attachment, and social dominance hierarchies. Explanations from evolutionary theory help us understand how each of these behaviors helps us adapt to our environment. Children's behavior is seen as an adaptation to the environment in two ways: (1) What children do is adaptive because it is a preparation for adult life, and (2) what children do is adaptive at their own stage of development and in their specific life circumstances.

One example of research based on an evolutionary developmental approach has focused on the onset of puberty in girls. The timing of when girls enter puberty is affected by many factors but is largely controlled by their genes. However, research has shown that girls enter puberty at earlier ages when their parents have a high level of conflict with little support or satisfaction in their marriage, when their father is absent or severely dysfunctional, or when they have an insecure relationship with their mother at age 15 months (Belsky, Houts, & Fearon, 2010; Saxbe & Repetti, 2009; Tither & Ellis, 2008). Evolutionary developmental psychologists point to the idea that a girl with a dysfunctional childhood may not be able to count on reaching adulthood successfully; therefore, early puberty is an adaptation to her environment that may ensure that she will be able to pass on her genes by enabling her to get pregnant earlier in life.

CHECK YOUR UNDERSTANDING

1. What role does adaptation play in the theory of evolution?
2. How do the processes of animal imprinting and human attachment differ?
3. According to sociobiology, why are you more likely to help a family member than a stranger?

ECOLOGICAL THEORY

We tend to think of the study of ecology as focusing on plants and animals and their relationships to the environment, but in the 1970s, Urie Bronfenbrenner (1917–2005) applied the idea of the interaction of organisms with their environment to the field of developmental psychology to create a theory of human ecology. Using this framework, he defined development as a function of the “interaction between the developing organism and the enduring environments or contexts in which it lives out its life” (Bronfenbrenner, 1975, p. 439). Bronfenbrenner believed that you cannot understand the life course of an individual without understanding how that person interacts with all the different facets of his environment. He also believed that this is a dynamic process. All aspects of the environment affect the individual, and the individual affects all aspects of his environment.

Bronfenbrenner emphasized the importance of understanding the individual, not on her own or with one or two other people, but rather within all of these contexts. His theory is, in part, a criticism of some of the techniques of experimental psychology, in which children are tested in the laboratory with an experimenter and perhaps a parent, and the results are then assumed to reflect how the child would act in a natural setting. He developed the concept of ecological validity, the idea that research findings should be able to generalize to real-world settings. For example, a laboratory may be an excellent place to look at reactions in a well-controlled experimental setting, but it is not necessarily a good way to look at the everyday interactions of parent and child (Bronfenbrenner, 1977).
Bronfenbrenner (1977, 1986) proposed that individuals grow and develop within a nested set of influences that he divided into five systems—the microsystem, mesosystem, exosystem, macrosystem, and chronosystem—as shown in Figure 2.7 on page 55. These systems are embedded one within the other, each influencing the other in a back-and-forth fashion. The relationship between the systems also changes over time as the child grows and develops.

The **microsystem** includes the face-to-face interactions that a person has in her immediate settings, such as home, school, or friendship groups. The interaction between a mother and a child forms a microsystem, as does the interaction between a child and a peer, or between a pair of siblings. The **mesosystem** brings together two settings that contain the child. For example, when parents meet and talk to a child’s teacher, the home setting interacts with the school setting and this interaction influences her progress at school. The **exosystem** consists of settings that the child never enters (that is, ones that are **external** to the child) but that affect the child’s development nevertheless. For example, even if the child never goes to a parent’s workplace, what happens in that setting can have an effect on the child. A job that is so demanding that it leaves a parent exhausted at the end of the day affects how the parents will interact with their children when they come home. The **macrosystem** consists of cultural norms that underlie the institutions and activities that make up someone’s everyday life. For example, the macrosystem in the United States includes the ideology of democracy, as well as the value that is placed on individual achievement. The **chronosystem** consists of the events that take place at different times in a child’s life, as well as the time in history in which the child lives. For example, parental divorce affects a 2-year-old child much differently than a teenager. Also, the current experience of parental divorce, when it has become more common, is different than it would have been in 1940 when it was a relatively rare occurrence (Bronfenbrenner, 1986).

It will be easier for you to remember the various systems that make up ecological theory if you are able to recognize examples of each of them. **Active Learning: Examples of Ecological Systems** gives you a chance to do this.

### Active Learning: Examples of Ecological Systems

Match each description below with the correct level of the ecological system that it represents. The levels are the microsystem, mesosystem, macrosystem, exosystem, and chronosystem.

<table>
<thead>
<tr>
<th>Example</th>
<th>System Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The number of mothers with children under the age of 5 who were employed outside the home doubled between 1970 and 1990.</td>
<td><strong>Microsystem</strong> In ecological theory, the face-to-face interaction of the person in her immediate settings, such as home, school, or friendship groups.</td>
</tr>
<tr>
<td>2. A child’s parents go to school for a parent–teacher conference so they can find out how their child is doing.</td>
<td><strong>Mesosystem</strong> The interaction among the various settings in the microsystem, such as a child’s school and home.</td>
</tr>
<tr>
<td>3. Native American parents raise their children to avoid interpersonal conflicts and to cooperate with others to work for the greater good.</td>
<td><strong>Exosystem</strong> Settings that the child never enters but that affect the child’s development nevertheless, such as the parents’ place of work.</td>
</tr>
<tr>
<td>4. The child’s preschool teacher shows the child how to stack two blocks on each other.</td>
<td><strong>Macrosystem</strong> Cultural norms that guide the nature of the organizations and places that make up one’s everyday life.</td>
</tr>
<tr>
<td>(Continued)</td>
<td><strong>Chronosystem</strong> In ecological systems theory, the dimension of time, including one’s age and the time in history in which one lives.</td>
</tr>
</tbody>
</table>
### Modern Applications of Ecological Theory

Ecological theory has expanded the range and number of characteristics that researchers include to more fully understand a child’s development within the context of many different aspects of life. For example, Brophy-Herb, Lee, Nievar, and Stollak (2007) used ecological theory as a basis for understanding the development of social competence in preschoolers. Instead of looking at single factors like socioeconomic status or family stress as predictors of children’s social competence, they examined an intersecting and nested array of factors that they believed would have an influence on social competence. These included individual characteristics of the child (age, sex, and level of stress); family characteristics (whether the parents were married or divorced, level of stress, and socioeconomic status); teacher behavior (classroom teaching style); and classroom climate (warmth, organization, and number of children with behavior problems). One of the findings illustrates the complexity of the research done with an ecological approach. Although they found that children with more stress in their lives were rated as having lower social competence, the nature of the child’s classroom modified this relationship. A child experiencing high stress was more likely to have lower social competence in a classroom in which many children had behavioral problems than a stressed child in a classroom where few other children had behavior problems.

Another legacy of human ecology is the application of theory to social policy. A human ecologist believes that all levels of society affect human development. The logical extension of this belief is to become involved in the creation of social policy, including legislation and programs at all levels of government. Bronfenbrenner himself was active in the creation of Head Start, a program that was designed to help disadvantaged children by providing interventions at several different levels. Head Start not only provides an excellent educational program for children but also helps their families by providing help with financial, social, educational, and psychological difficulties they might be experiencing. It also works hard to create links between the classroom setting and the child’s home.
CHECK YOUR UNDERSTANDING

1. Why is it important to understand children within the context of the world around them?
2. What are the five systems that make up Bronfenbrenner’s ecological system?
3. Why does ecological theory play an important role in shaping social policy?

DYNAMIC SYSTEMS THEORY

In the past 30 years, the study of children’s development has become increasingly sophisticated. Esther Thelen (1941–2004) introduced the idea that development is a complex process that involves the dynamic interaction of a multitude of systems, including individual biology, environmental influences, the way we control ourselves and interact with others, and how we think about, or represent, our experiences in our minds (Sameroff, 2010). Within an
individual, any one system, such as the visual perception system, interacts with other systems, such as the motor system, to respond to experiences in the environment. **Dynamic systems theory** states that all these different aspects of development interact and affect each other over time in unique ways for each individual. In this theory, development is more like a jazz improvisation than a written piece of music (Spencer, Perone, & Buss, 2011). As the child seeks solutions for developmental problems that arise, each element adjusts to every other element resulting in a unique pattern for each child.

To illustrate how this process works, we can look at how Thelen applied the theory of dynamic systems to the development of motor skills. Whereas earlier theories had linked motor development to body and brain maturation, her research provided evidence that biological maturation operates in interaction with environmental influences (Spencer et al., 2006). Thelen found that the nature of physical development was flexible, not absolute. For example, newborn babies have a stepping reflex in which they appear to be walking when held upright, even though they cannot support their own weight. This reflex typically disappears at about 2 to 3 months of age, and it was initially thought that this was a product of brain maturation. However, Thelen found that babies who seem to have lost their initial stepping reflex will begin stepping again if placed up to their chests in water so that their legs are not so heavy, which means that the disappearance of this reflex is not driven solely by brain development (Thelen, 1989). Infants stop “stepping” reflexively when their legs become too heavy for them to lift. Thelen posited that the development of real walking is not just a matter of biological maturation but a coming together of many different experiences, bodily growth, and motivation. She showed that each infant explores and develops these abilities in different ways, depending on such individual characteristics as weight and activity level. Each child experiments with how to do things, and each action he takes influences what the next action will be, creating a pattern of development that is unique to that person.

**Modern Applications of Dynamic Systems Theory**

Dynamic systems theory was first applied to physical development, where it became a framework for interventions with children who have motor challenges, such as cerebral palsy. These challenges had previously been seen primarily as issues that involved the maturation of the nervous system, and the goal of therapy was to replace abnormal muscle tone and posture with normal posture (Darrah, Law, & Pollock, 2001). Therapists now recognize that children with motor dysfunction may discover solutions on their own for their challenges. Dynamic systems theory has led therapists to consider characteristics of the child, including the nervous system, the musculoskeletal system, and the child’s motivation or readiness, the environment, and the nature of the task itself when planning an intervention (Perry, 1998; Sauve & Bartlett, 2010).

In recent years, dynamic systems theory has been used to promote the understanding of many different aspects of child development, including cognitive development. This theory helps us to understand that influences between systems do not go in just one direction. The brain affects the body, but the body also affects the brain in an ongoing dialogue that continues over time (Spencer, Austin, & Schutte, 2012). For example, adults were shown one
of the following photos of a pitcher and asked to press a button to answer the question “Is this a pitcher?” They responded more quickly when the button for the “yes” response was on the same side of their body as the handle for the pitcher (Thelen & Smith, 2006). People recognize an object more quickly when the response they make is compatible with their action on the object (picking up the pitcher). Action and visual perception are thus connected and influence one another. Dynamic systems theory continues to show surprising interactions among the many aspects of human functioning and human experience.

**CHECK YOUR UNDERSTANDING**

1. How is human development similar to a jazz improvisation?
2. How does dynamic systems theory show that motor activity influences the activity of the brain?

**OVERVIEW AND HISTORICAL CONTEXT OF THEORIES**

You can review the developmental theories described in this chapter using Table 2.2. To have a broader historical understanding of how some of these theories developed, read *Journey of Research: Theories in Historical and Cultural Context*.

<table>
<thead>
<tr>
<th>Theory</th>
<th>Quantitative or qualitative change</th>
<th>Biology and/or environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychoanalytic Theory</td>
<td>Qualitative: Freud has 5 stages</td>
<td>Biology drives development and is affected by environmental experiences.</td>
</tr>
<tr>
<td></td>
<td>Erikson has 8 stages</td>
<td></td>
</tr>
<tr>
<td>Behaviorism</td>
<td>Quantitative</td>
<td>Environment drives development.</td>
</tr>
<tr>
<td>Piaget’s Cognitive Theory</td>
<td>Qualitative: Piaget has 4 stages</td>
<td>Biology drives development, and the environment shapes it.</td>
</tr>
<tr>
<td>Vygotsky’s Cognitive Theory</td>
<td>Quantitative</td>
<td>Environment, in the form of culture and social influence, drives development.</td>
</tr>
<tr>
<td>Information Processing</td>
<td>Quantitative</td>
<td>Biology and environment interact.</td>
</tr>
<tr>
<td>Evolutionary Theories</td>
<td>N/A</td>
<td>Biology underlies adaptation to the environment.</td>
</tr>
<tr>
<td>Ecological Theory</td>
<td>Quantitative</td>
<td>A nesting of environmental influences is also affected by a child’s biology.</td>
</tr>
<tr>
<td>Dynamic Systems Theory</td>
<td>Quantitative</td>
<td>Biological growth interacts with environmental experiences.</td>
</tr>
</tbody>
</table>
Theories in Historical and Cultural Context

What follows is not a complete review of the history of developmental theories, but it illustrates well the ways in which historical and social contexts influence the nature of theories. Each of these theories continues to influence our study of child and adolescent development to this day, although they are not equally influential.

Freud’s psychoanalytic theory. Some aspects of Freud’s theory may seem quaint or even a bit strange to us today because they are based on beliefs about human sexuality that reflect the culture at the time in which Freud lived—the Victorian era in Germany during the late 19th century. This was a time in history when sexuality was treated as something private or even shameful. Sex was seen as a necessary evil for procreation within a marriage, and sex for pleasure was frowned upon (Goodwin, 2005).

In this context, Freud interpreted the mental disorders that he was seeing in his patients as the product of some sexual trauma—real or imagined—in their early experiences. He reasoned that if you cannot accept sexual feelings or thoughts, they will be pushed down into the unconscious, only to resurface from time to time in ways that disrupt your functioning (Goodwin, 2005). While this explanation may have made sense in the context of the Victorian era, it may have less relevance in cultures where sexual impulses are seen as a normal expression of our humanity.

John B. Watson and behaviorism. Behaviorism came to prominence in America in the early part of the 20th century, at a time when psychology was moving away from Freud’s focus on what was going on inside a person’s mind (either the conscious or the unconscious part of it) and toward a focus on what was observable—the person’s behavior (Crain, 2005; Goodwin, 2005). In 1913, Watson published an article titled “Psychology as the Behaviorist Views It” in which he described psychology as a “purely objective experimental branch of natural science” (Watson, 1994, p. 248) with a goal of predicting and controlling behavior. His research with Little Albert reflected these goals.

Watson also was influenced by the work of a contemporary Russian physiologist, Ivan Pavlov, and came to believe that all one needed to do to understand development was to understand the stimulus-response relations that controlled it (Lerner, 2002). In his 1928 book, Psychological Care of Infant and Child, Watson applied behaviorist learning principles to child rearing. For instance, he warned parents that being too affectionate toward their children would make the children irresponsible, dependent, and unsuccessful in later life. The book was quick to find an audience because, at this point in history, parents wanted to benefit from this new, more scientific approach to understanding behavior.

Although behaviorist psychology dominated American psychology until the middle of the 20th century, it was not widely influential in Europe, where ideas from cognitive theorists such as Piaget and Vygotsky shaped scientific thinking about child development (Goodwin, 2005).

Jean Piaget and cognitive developmental theory. Today Jean Piaget is recognized as one of the most influential theorists in the field of development. However, he lived and worked in Europe and when his work was first published in the 1920s and 1930s, it received a cool reception in America (Whitman, 1980). While American psychology was moving in a more rigorous scientific direction, Piaget was conducting research using open-ended clinical interviews with children. In the middle of an interview, he might suddenly change the questions he was asking to pursue something that the child had said that caught his interest.

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Piaget, 1969). He also spent a great deal of time observing the spontaneous behavior of children, including his own three children. His research did not contain statistics to back up his conclusions and he used abstract concepts as explanations (Lerner, 2002). By the 1960s, however, a reaction was developing to strict behaviorist approaches and their reduction of human behavior to a set of stimulus-response connections. American psychologists had become more open to new ideas like humanistic psychology, which emphasizes a person’s conscious ability to make choices, and ecological psychology, which examines behavior within multiple contexts. In this new climate, Piaget’s ideas were now embraced for the richness with which they described children’s ways of understanding their world.

Urie Bronfenbrenner and ecological systems theory. Another reflection of the growing dissatisfaction with the direction in which psychology was going came from Urie Bronfenbrenner in an article written in 1977 for the journal American Psychologist. In it, Bronfenbrenner criticized what he saw as a narrow focus on collecting data for data’s sake and a reliance on experimental designs that were so carefully controlled that they resulted in highly artificial situations that had little resemblance to the real life of children. His concern was captured in his statement that “it can be said that much of contemporary developmental psychology is the science of the strange behavior of children in strange situations with strange adults for the briefest possible periods of time” (Bronfenbrenner, 1977, p. 513). Rather than seeing the environment as something that needs to be controlled, Bronfenbrenner believed that we must study behavior as it occurs embedded within a nest of environments and settings because each of these has its own impact on the process.

The 1960s and 1970s were a time of great change in American society, and part of this change was a new appreciation of the pluralism and diversity of people’s experiences. Bronfenbrenner’s ecological systems theory used a more holistic approach to draw attention to the immediate, as well as the distant, influences on development (Lerner, 2002). The challenge for researchers today is to find ways to study the incredible complexity of multiple, interacting influences on development. The result of doing this, however, is a richer, more complete understanding of the process of human development.

If you stop and think for a moment about how the world you live in today influences the way you think about children and how they develop, you will realize that our culture and our experiences so color our worldview that we might not even be aware of those influences unless we make a conscious effort to think about them. In the next section, you will see how the technological advances that have marked the beginning of the 21st century have influenced our current ideas about child development.

### THE IMPACT OF BIOLOGY AND CULTURE ON CHILD DEVELOPMENT THEORY AND RESEARCH

We have described many of the major theories that drive research on children’s development. In this section, we describe two major factors that are not theories, but still play a very large role in the type of research carried out in the field of child development. All aspects of development interact with our basic biology, including our brain and its development and our genes. We first describe the impact that new technological advances have had on our understanding of the role of biology in development. The second factor is the major role that culture plays in determining the goals and practices that bring about specific outcomes for children around the world.
NEUROPSYCHOLOGY AND BEHAVIORAL GENETICS

2.3 What are neuropsychology and behavioral genetics?

Neuropsychology, the study of the interaction of the brain and behavior, and behavioral genetics, the study of the interaction of genes and behavior, are on the cutting edge of research in the field of child development. Using new brain imaging technology and research methods, researchers are able to see the structure and functioning of our brains as they never have before, and whole genome sequencing can be used to identify specific genes. These new capabilities have produced an avalanche of research that connects the brain and specific genes with different aspects of children's development. The earliest approaches to studying both genes and the brain assumed that biology determined behavior. However, the more we learn about the functioning of both the brain and genes, the clearer it becomes that the effects go in both directions. Biology has an impact on behavior, but the environment also affects our biological functioning. The brain's development, to some extent, depends on an individual's experiences. The development of connections between nerve cells, the coating of the nervous system, and the neurochemistry of the brain are all shaped in part by what a person does. For example, when you intensely study a foreign language, you increase the amount of grey matter in your brain. It appears that the cognitive control you use to switch from one language to another is reflected in changes in particular parts of the brain (Li, Legault, & Litcofsky, 2014). Likewise, environmental events also affect the expression of genes. For example, research has shown that when children experience child abuse the expression of certain genes can be changed. These changes may account for the higher reactivity of these individuals to stress later in their lives (Essex et al., 2013; Lester et al., 2011). You will learn more about the interaction of genes and behavior in Chapter 4, and more about neuropsychology in Chapter 6. Examples of these topics appear throughout this book.

CHECK YOUR UNDERSTANDING

1. How has new technology changed research in the fields of neuropsychology and behavioral genetics?
2. How do children's life experiences affect the development of their brain?

DEVELOPMENTAL THEORY IN A CULTURAL CONTEXT

2.4 How does culture influence theories of child development?

Although some of the theories we have described take cultural differences into account, all were developed by European or American theorists and most are based on research with Western, middle-class families (Kärtner, 2015). If we assume all societies must conform to Western values, we forget that different ideas and behaviors may be more adaptive for children growing up in different contexts and environments. To understand the diversity of development, we must take into account the indigenous theories, or ethnotheories, of child development that guide the way children are raised in a variety of cultures.

Many of the theories we’ve described in this chapter focus on the development of the individual. However, as we said in Chapter 1, a focus on individual identity as well as individual needs and achievements is largely a Western value. Developmental theory in many non-Western cultures focuses instead on the role of the individual in the context of the social group. For example, Nsamenang and Lo-oh (2010) explain that in sub-Saharan Africa, the overarching theory of development “positions the child not in his or her sovereignty but as socially integrated in a human community” (p. 386). This means that children are seen primarily as participants in their cultural communities, rather than as autonomous individuals. To illustrate, compare
Erik Erikson’s stages described earlier in this chapter to the following stages of development described by Nsamenang (2015) for African culture: the neonatal period, social priming, social apprenticeship, social entrée, social internment, adulthood, old age/death, and ancestral and spiritual selfhoods. Social priming might compare to Erikson’s stage of autonomy versus shame and doubt, and social apprenticeship might compare to Erikson’s stage of identity versus role confusion. In African culture, the issues focus on how the child moves into competence in the social world, while Erikson’s stages focus on the goal of individual identity for the child.

Even within Western cultures, goals can differ. In a study of seven Western countries, parents from all the countries included “sociable,” “loving,” “active,” and “strong-willed” in their description of their child. However, U.S. parents also included “intelligent” and “independent,” while Italian parents were more likely to describe their child as “even-tempered” and “simpatico,” indicating more social and emotional competence (Harkness, Johnston Mavridis, Ji Liu, & Super, 2015). As we described in Chapter 1, these cultural values are transmitted from parent to child from birth through adolescence.

Theories are shaped by the culture in which they exist. We've described a number of theories that relate to cognitive development. Intelligence and cognitive development are seen as valuable in their own right in Western cultures. However, in many African cultures, responsibility is a higher goal, and intelligence is interpreted within the context of an individual’s ability to carry out responsibilities in the household. The focus of African theories would likely be quite different from those developed in Western countries.

CHECK YOUR UNDERSTANDING

1. How does culture play a role in theories of child development?
2. How do a culture’s values shape the conceptualization of the stages children go through?

CONCLUSION

Studying these theories should help you understand the source of most of the rest of the ideas presented in this book. By exploring the big questions of why and how we develop from childhood through adolescence, we gain a deeper understanding of our observations and interactions. Although you might be tempted to say “I agree” or “I don’t agree” with any particular theory, it is important to base your opinions on reasoned arguments that can be tested. Whether you accept one theory or another should ultimately depend on the evidence that supports or refutes each one. In the next chapter, we examine how psychologists carry out research to help us move toward a better understanding of human development.

CHAPTER SUMMARY

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psychosocial stages. Freud’s theory has application in understanding and treating mental and emotional disorders. Erikson’s theory has helped us understand the influence of social experiences on development.

b. Behaviorism. The theory of behaviorism states that the environment determines development. In classical conditioning an unconditioned stimulus is paired with a neutral stimulus. After repeated pairings, the neutral stimulus elicits a conditioned response. In operant conditioning something that follows a behavior affects the likelihood of that behavior happening again. Reinforcement increases the behavior, while punishment and extinction decrease it. Classical conditioning has been used in the treatment of phobias. Operant conditioning has been used for classroom management and in applied behavior analysis.

c. Social cognitive theory. Bandura’s social cognitive theory emphasizes the importance of imitation as a learning process. It has been applied in the study of self-efficacy.

d. Theories of cognitive development. Piaget’s theory of cognitive development states that we are always trying to organize our understanding of the world by fitting new information into our current understanding, or accommodating new information by changing our concepts to fit that information. The idea that children actively construct their understanding of the world has significantly influenced the field of education. Vygotsky emphasized the role of social interaction and believed adults or more skilled peers build children’s knowledge through interaction. His theory has been applied through the use of dynamic assessment and collaborative learning in educational settings. Two models of the theory of information processing are the stores model that likens the mind to a computer and portrays mental processing as a linear progression of steps, and the connectionist or neural network model that describes mental processing as a network of concept nodes that are interconnected by links similar to the connections between neurons in the brain. These models have helped us understand cognitive processes and are helping us learn about the structure and function of the brain.

e. Evolutionary theories. Ethology is the study of animal and human behavior in relationship to their adaptation to the natural environment. Sociobiology examines the role that genes play in influencing human social behavior that evolved to promote adaptation to the environment. Evolutionary theories help us understand how our behaviors help us to adapt to our environment.

f. Ecological theory. Bronfenbrenner proposed that individuals grow and develop within a nested set of influences that he divided into five systems: microsystem, mesosystem, exosystem, macrosystem, and chronosystem. His theory has been applied in research that considers multilevels of influence on behavior and development, and in developing effective social policy.

g. Dynamic systems theory. Dynamic systems theory examines the way all aspects of development—biological, cognitive, and social-emotional—influence one another. It has found application in interventions for motor development problems.

2.3 What are neuropsychology and behavioral genetics?

Neuropsychology is the study of the brain and behavior. Behavioral genetics is the study of genes and behavior. Both the brain and genes are influenced and shaped by an individual’s experiences.

2.4 How does culture influence theories of child development?

All cultures have their own theories about how children develop. To understand what is most adaptive within a particular context and environment, we must always keep in mind the realities of children’s lives in different settings.

**KEY TERMS**

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- Anal stage
- Applied behavior analysis (ABA)
- Behavioral genetics
- Behaviorism
- Chronosystem
- Classical conditioning
- Collaborative learning
- Connectionist or neural network model
- Constructivism
- Developmental cognitive neuroscience
<table>
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<td>Unconscious mind</td>
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