



CHAPTER

4

Learning Theories

This chapter will help you answer these important questions:

- How do we define development, learning, and theory?
- What is the constructivist view of learning?
- What is Piaget's theory of cognitive development?
- What is information processing theory?
- What is Vygotsky's sociocultural theory of development?
- What is Bronfenbrenner's bioecological theory of development?
- What is Erikson's theory of psychosocial development?
- What is Maslow's hierarchy of human needs?

Vignette: Let Me Show You How

A mother-child dyad (pair) is engaged in stringing beads of different sizes, shapes, and colors. The child (C), who is 4 years old, must refer to the series of picture cards (each depicting a specific stringing pattern) as she engages in the learning task of stringing beads with her mother (M).

M: (Enlists the child's interest by asking a question and pointing to one of the two cards placed on the table.) "OK, see these? What are these?"

C: "Circles."

M: "And these?" (Points again to another picture card with beads.)

C: "Squares."

M: "Look at them closely."

C: "Oh, triangles!"

M: "OK, and what are these?"

C: "What?" (Looks on very intently.)

M: "What are these?" (Holds up another picture card with beads.)

C: "Triangles."

M: "Are they all the same size?"

C: "Yes." (Points to other shapes on the card.)

M: "That's little, so then not all the . . ."

C: "And that's little, and that's little . . ." (Interrupts the mother, pointing to the beads on the card.)

M: "Yes. What sizes do you see here?"

C: "Big ones."

M: "Uh huh . . ."

C: "And little ones and short ones." (Interrupts again.)

M: "So are they all the same size?"

C: "No."

M: "OK. Now you have to take this little thing here and put it through the center of the shape." (Holds up the string in front of the child.) "What color shape should you use, and what size?" (Moves the card closer to the child and points.)

Key Elements for Becoming a Professional

NAEYC DEVELOPMENTALLY APPROPRIATE PRINCIPLE 2

Many aspects of children's development follow well-documented sequences, with later abilities, skills, and knowledge building on those already acquired.

Interpretation

When teachers are familiar with the sequences and patterns of children's development, they are better equipped to plan successful learning experiences for children, and they are more adept at intentional teaching.

NAEYC STANDARD 1: PROMOTING CHILD DEVELOPMENT AND LEARNING

- a. Understand young children's characteristics and needs from birth to age 8.
- b. Understand multiple influences on the child's development.
- c. Use developmental knowledge to create healthy, respectful, supportive, and challenging environments for children.

- C: "A small blue square?" (Scrambles around in the box, selects a small blue square, and attempts to string it.)
- M: "Let me show you how." (Gently takes the string and bead from the child's hand and demonstrates as the child looks on intently.)
- C: "I want to try now." (Reviews the picture card.)
- M: "Alright. You will need to find a small orange triangle to match the card, OK?" (Hands over the string to the child with the blue bead already on it.)
- C: "I like stringing beads." (Successfully places a small orange triangle on the string.)
(Roundtree, 2000)

This vignette, as in the case of countless others that you have either experienced or witnessed at some point in your life, demonstrates the very essence of teaching and learning. In every exchange between mother and child, this vignette underscores the crucial role that mothers and other significant caregivers play in bolstering children's (cognitive) development. For a novice in the field of early childhood education, this vignette probably raises countless questions about children's growth and development, and, oftentimes, an answer to one question gives rise to another. While most critical questions have been answered by the various theories of learning and development that we uphold today, some questions still warrant further observation and study of young children. Nevertheless, this chapter seeks to provide the budding early childhood professional with answers to some of the most fundamental questions about how children come to "know" and provides an introduction to what many early childhood educators deem the quintessential theories of learning and development. The theories discussed below are "blueprints" of the human change process and provide a sound basis for our understanding of how and why young children change as they age.

HOW DO WE DEFINE DEVELOPMENT, LEARNING, AND THEORY?

Before we proceed any further, it is important to garner an understanding of three very important terms that we will use quite frequently in this chapter. These terms are *development*, *learning*, and *theory*.

Development

Development, a term that has its basis in human biology, is the process of change and movement in all domains of a child's existence (i.e., cognitive, linguistic, socioemotional, and physical). Such changes begin from the moment a child is conceived and continue throughout the course of that child's life. Development comes as a result of the individual's ongoing interaction with his or her environment. Therefore, development is never static; it is always dynamic and persistent. Early childhood is a period of unprecedented growth and change, a time when a child masters a range of skills and confronts a plethora of life tasks and challenges in preparation for adulthood.

As humans, our developmental patterns are more alike than different, thanks to the leading role that **genes** play in the drama of human development. Genes, our units of hereditary information, are composed of **DNA** (deoxyribonucleic acid) and are the very foundation of human

development. Genes are passed on to us by our parents, and they impact every aspect of human development. Life begins with genes. The DNA carried in the genes provides specific instructions to the egg (zygote) to form the body, brain, and specific heritable traits of a growing fetus. Certainly you discovered a long time ago that the curly locks or brown eyes you inherited were not simply by chance. Genes not only determine one's physical traits; they affect an individual's growth and development over time. Hence, human genetics seems to place most of us on a typical course of development.

However, although genes remain a primary determinant of human development, they alone do not have the final say in what each individual will ultimately become. It is important not to underestimate the impact that culture, experience, and individual differences (i.e., temperament, birth order, socioeconomic status, etc.) have on development. For example, most young children begin to walk at about 12 months of age. However, infants who are firstborn and whose parents often carry them might walk much later than their peers and future siblings. Hence, a child's delay at walking might be due to several factors, i. e., genes, doting, overprotective parents ("helicopter moms"), the child's temperament, which might perpetuate the parents' doting behavior or health concerns of the child. Similarly, a child who experienced a severe ear infection as a toddler might experience significant speech delay during the preschool years, resulting in the need to participate in speech therapy.

Fortunately for our sake, personal traits and environmental experiences very rarely result in delayed or challenged development. In most cases, our genes and personal experiences work together to propel our development, placing us on a very forward-moving trajectory or life course. Consider the case of one of the greatest entertainers of all time, Michael Jackson, the "King of Pop." As a toddler during the late 1950s, Michael Jackson began to synchronize his body movements to the rhythmic sounds of the family's old washing machine while sitting on his mother's lap. This unique ability to hear rhythm and music from a rather uncanny source demonstrated Michael's unusual musical genius at a very young age, which was, it seems, genetically based. However, Michael's life circumstances and the range of musical experiences that his family afforded him were very instrumental in cultivating his musical prowess over time. It seems that Michael Jackson's unique personal circumstances (sociocultural experiences, in-home musical instruments, child rearing, etc.) and his unique genetic makeup (temperament, musical talent, kinesthetic abilities, etc.) interacted in such a way as to gain him preeminence in the entertainment world.

Based upon a child's unique experiences and hereditary factors, he or she may be described as either delayed, typically developing, or genius or as demonstrating various degrees of these categories. In the case of Michael Jackson, his musical genius far exceeded that of his siblings, who were also musically gifted and a part of the famous family singing group, the Jackson 5. When it comes to development, young children of the same age can take their respective place anywhere on the developmental continuum. It is our understanding of the general course of development that most children undergo, as well as the individual differences that exist among children, that makes the study of child development so fascinating.



As is the case with many child stars, the early nurturing Michael Jackson (middle, above) experienced was a major determinant of his prolific career.

Learning

For the purposes of this chapter, the term **learning** is defined as a relatively fixed or lasting change in the way a child behaves or responds to his or her environment due to experience. Learning consists of adaptations in the child's thinking or cognitive processing abilities as a result of his or her personal experiences—adaptations that are ultimately manifested in the child's observable behavior.

However, it is important to note that not all experience-based cognitive changes are immediately observable in a child's behavior output. Observable changes can be quite unpredictable in the life of the active toddler or growing preschooler because, like adults, young children also need to experience the "aha" reaction in order to solidify their learning. Sometimes evidence of appreciable changes in a child's thinking capacity is seen much later in the child's development, such as when a child finally masters a 12-piece puzzle that he or she has been struggling with for about a month or when a child successfully ties his or her sneaker laces after several trials. Learning is delayed until such time the child's experience affords him or her another opportunity to demonstrate mastery of a particular skill.

Over the course of history, the concept of learning and its related processes have been widely investigated. In fact, we have been engaging in the process of learning for so long that we think about the very process itself. When individuals engage in the process of "thinking about thinking," it is referred to as **metacognition**, a term often used by **developmentalists**, individuals who investigate the changes that people undergo in all aspects of their development throughout the life span. According to Bjorklund (2005), metacognition is "the knowledge of one's cognitive abilities and processes related to thinking" (p. 5).

While metacognition, or one's capacity to "think about learning," doesn't even begin to surface until a child is about 5 or 6 years of age, becoming increasingly better during the elementary school years, children's ability to learn is with them from their very earliest existence. As a matter of fact, there is evidence of some learning occurring while the developing child is in utero (Bjorklund, 2005).

But when it comes to learning and development, which comes first? Does learning precede development, or does development precede learning? Most developmentalists would say neither precedes the other but rather that a reciprocal relationship exists between learning and development—meaning that learning impacts development *and* development, or a child's maturational readiness in any of the domains (cognitive, linguistic, socioemotional, and physical), impacts his or her ability to learn. This reciprocal relationship is like a dance, with development edging one's learning potential right along and learning, simultaneously, doing what it can to advance one's development, or maturation, in a given domain.

Learning is a cumulative process, and qualitative changes in development do not end with childhood. As you read this textbook, we hope that you are acquiring some basic information that will increase your knowledge base and, ultimately, improve your skill set as a professional in the field of early childhood education. Learning continues to be a lifelong process for both the writers and the readers of this textbook.

Theory

According to **Kurt Lewin** (1943), a German American psychologist known for his work in the areas of social/applied psychology, group dynamics, and change theory, nothing is better or more practical for our basic understanding of life and how and why things work than a "theory." Theories uncover mysteries and lead to discoveries, and discoveries lead to further questions—and so the cycle continues (Salkind, 2004). For our purposes here, a **theory** is a systematic statement comprising principles, generalizations, and assumptions that helps to frame our understanding,

interpretation, and explanation of learning and development. Theories help us to organize our thinking or mental schemes (structures) around interesting and complex phenomena that are often difficult to explain. Moreover, theories are the result of critical thinking. **Critical thinking** is the process by which individuals evaluate their assertions and claims about an interesting or puzzling phenomenon and provide justifications based on well-documented evidence that has been empirically researched.

All of us have theories, and many of us theorize all day long. In everyday life, these “theories” are usually referred to as gut feelings or hunches (not to be confused with “scientific theories” that are based on empirical research). We have a hunch about what makes a person “tick.” We have a gut feeling about the necessary strategies to use in order to maintain a healthy relationship with a loved one. We even possess our very own instincts regarding the best way to raise children, which might be altered somewhat after completing this textbook—even though theories regarding child-rearing practices are usually “hardwired” or firmly ingrained in one’s psyche (Greenfield, Keller, Fuligni, & Maynard, 2003).

Adults are not the only ones whose way of life is often determined by the theories they embrace. Very young children have theories, too. For instance, a young toddler, albeit unknowingly, has a theory about how to push or pull a particular toy in order to get certain results. Even infants utilize their early experiences to draw assumptions about how individuals are likely to respond to them. These experiences form a frame of reference that infants tend to tap into as they grow. This frame of reference, referred to as a **working model**, is employed whenever the infant comes in contact with people. For example, infants who receive consistent and responsive care will, invariably, use that working model whenever they meet someone over the duration of their life. Their working model, which is subject to change, is that all people are consistent and quite predictable (Bretherton & Munholland, 1999; Thompson & Raikes, 2003). Recently, **theory theorists**, or researchers who purport that humans are naturally driven to devise theories, have noted that infants and children possess sets of innate theories that they constantly adapt during their childhood years until they arrive at an understanding of the world that is very much in sync with that of the adults belonging to their culture (Spelke & Newport, 1998). Young children tend to use their innate theories in much the same way as scientists do: to predict, interpret, and explain the world around them (Bjorklund, 2005). Researchers have also found that 2- and 3-year-olds seem to be obsessed with asking questions that alleviate their obsession with seeking reasons, causes, and underlying principles for things, especially things that concern them. During the early childhood years, children appear to be driven to construct their own theories about almost everything they see and hear (Gopnik, 2001). In a study involving Mexican children and their mothers, the mothers were asked to maintain a journal detailing their children’s “Why?” and “How?” questions and their response to the youngsters for a period of two weeks. For the most part, children’s questions centered on the purpose of things and human behavior, and the children were less curious about nonliving objects (Kelemen, Callanan, Casler, & Perez-Granados, 2005). This engagement or interest in scientific reasoning (asking questions, formulating a hypothesis or hypotheses,



Children, at any age, can employ the steps of scientific inquiry.

researching, collecting data, analyzing results, and drawing conclusions) continues throughout the elementary school years and beyond. Hence, an 8-year-old child will patiently employ the various steps of the scientific method in order to witness the metamorphosis of the caterpillar into a beautiful butterfly by either proving or disproving his or her theory at every step in the process.

WHAT IS THE CONSTRUCTIVIST VIEW OF LEARNING?

Most learning and developmental theories underscore the vital role that environment and significant adults (mother, father, teacher, and/or other consistent caregivers) play in the life of a developing child. Young children are constantly interacting with their physical and social worlds; it is how they come to know and understand the people and things around them. Children are active and persistent in their approach to construct their own meaning of their world. They have a natural ability to think about their actions and social interactions. Children's motivation to understand the inner workings of the world around them is the very essence of the constructivist view of learning (see Chapter 2). Structural changes in the way children come to think about their world are a direct result of their myriad experiences. They seem to be always about the business of framing and reframing their mental structures (altering their thought processes) as they derive meaning from their daily experiences and interactions. Children are like "little construction engineers"; in much the same way that construction workers need tools, nails, and steel to build a building, young children need people, places, and things in order to construct their knowledge of their personal world.

Thanks to the seminal ideas of John Dewey (1916), a pragmatic and progressive educator in the late 19th century, we now have an evolved understanding of constructivist learning (see Chapter 2). Dewey, who considered the classroom a small democratic society, rejected the notion of learning as a passive process and emphasized the importance of providing learning experiences for students that were interactive and thoroughly engaging. Dewey's philosophy prompted schools in the late 1800s and early 1900s to adopt deliberate and systematic ways to create learning environments in which children's cognitive gains were the direct result of their classroom encounters and freedom to form relationships. Devotees of Dewey's educational philosophy still exist today. Those who adopt a purist constructivist position would vow that constructing meaning *is* learning—and, therefore, that knowledge does not exist independent of the learner. Knowledge is not simply floating around in space somewhere waiting for someone to come along and grab it; the only *true* knowledge that exists is the knowledge we construct for ourselves. Constructivists believe that knowledge cannot simply be "spoon-fed" to children. Children's learning process must consist of hands-on experiences that engage both their bodies and their minds; children must have the opportunity to experience the world through their many senses as well as to process those sensory data.

Furthermore, constructivists also believe that how young children process information changes with time and experience, as evidenced by their behavior. Children of different developmental ages and, oftentimes, children who are the same age are not likely to perceive the same experience in exactly the same way. This is a result of variations in children's processing (thinking) abilities and differences in their extant (existing) knowledge at any given stage in their development. A 3-year-old, a 5-year-old, and a 7-year-old will have very different perspectives and interpretations of the same event (Bjorklund, 2005). Similarly, an older infant who picks up a crayon and tries to eat it soon learns as a toddler that the crayon can be used to make squiggly lines on a piece of paper or on a wall. It will take several more months before the child realizes that walls are typically excluded as a likely venue to show off artistic abilities.

Early childhood educators who uphold a constructivist view of learning facilitate children's thinking by seeking varied opportunities to engage them. They encourage collaborative and peer learning among children, organize stimulating and challenging classroom environments, and provide numerous opportunities for children to problem solve on their own. These teachers facilitate children's learning by focusing their attention to details, modeling, guiding children's behavior, asking questions, and getting children to think "a head above," or slightly above their developmental capacity.

WHAT IS PIAGET'S THEORY OF COGNITIVE DEVELOPMENT?

Piaget can be credited with making the most appreciable advances in our understanding of children's thought processes, thanks to his thorough investigation into the **epigenesis** of human intelligence—that is, the study of how one's interactions in the environment influence development. According to Piaget, with increase in age comes increase in cognitive abilities; thus adults, unlike children, demonstrate both reasoned and logical thought processes. Some psychologists revere Piaget as the "giant in developmental psychology in the area of cognition" (Weber, 1984, p. 151). Before Piaget introduced his theory, children were considered to be passive beings, molded and shaped by their surroundings (DeVries & Kohlberg, 1987). Much of Piaget's research in child cognition was based on the very meticulous observations of his three children; he spent years watching his three children, carefully observing the use and function of their eyes, ears, arms, and legs during their very early development. A constructivist at heart, Piaget firmly believed that children construct their knowledge of the world by using what they already know to interpret novel experiences and events. Piaget was not as concerned about what children knew as he was about how they processed problems and devised solutions to challenging tasks.

According to constructivists such as Piaget, cognitive development constitutes qualitative *and* quantitative changes in the way children reason and think about their worlds. A 3-year-old is not a miniature version of a 10-year-old who simply lacks the experience and knowledge of his or her older peer. Not only are there **quantitative differences**—variations in the *amount* or *degree* of knowledge that each child possesses—but also there are **qualitative differences**, or variations in how children know what they know. There are differences in the *type* and *form* of knowledge that each child possesses (Bjorklund, 2005).

Piaget's work in intelligence testing spurred his interests in children's thought processes. Resultantly, he became interested in the further exploration of children's right or wrong responses. Piaget wanted to know why individual children provided different reasons to justify their response to a particular test item. For example, two children may agree that a tree is alive but offer very different explanations for their response; one child might reply "because the tree moves," and another child might say "because it makes seeds." Piaget's work revealed many surprising ways in which children think (DeVries & Kohlberg, 1987, p. 17). He contended that children's "incorrect" views about the world are subjective—reflecting a very unique personal perspective (DeVries & Kohlberg, 1987). In other words, each child's unique interactions in the world precipitate his or her thoughts and reactions.



Quality early childhood classrooms provide experiences for children that are constructivist in nature. The 5-year-old in this photo is reconstructing her experiences of visiting community helpers by journaling these events.



A giant in the field of developmental psychology, Piaget made an unprecedented contribution to the study of cognition in children.

Piaget's use of the clinical interview method (see Chapter 2) during intelligence testing provided copious notes describing the reasoning processes underlying children's correct and incorrect responses. One researcher referred to Piaget's particular technique of questioning children as a **semi-clinical interview**—a type of "peculiar play situation" (Russell, 1956, p. 160). As children engaged in a task, Piaget would use a flexible, unstructured questioning technique to determine their thought processes. During these semi-clinical interviews, a child's first response would determine Piaget's line of questioning or the series of subsequent questions.

Piaget is also considered to be a **stage theorist**. He believed that children's cognitive development consists of four distinct stages, with each stage of development to be qualitatively and quantitatively different from the one that preceded it and the one that would follow (see Table 4.1). According to Piaget's theory, all children's cognitive processes proceed in the same sequential manner; it is not possible for a child to miss a stage, nor is it possible for children to regress to an earlier stage of reasoning or cognitive functioning. Changes in children's thought processes and their progression from one stage to the next occur rather abruptly and over relatively brief periods. However, Piaget emphasized that there is evidence of continuity in the development of cognition, which facilitates the child's relatively easy transition from one stage of cognitive development to the next. According to Bjorklund (2005, p. 79), continuity is achieved due to brief "preparatory phases" between stages in which the developing child withstands a dual existence in two qualitatively different cognitive worlds. Thus, a 7-year-old child may demonstrate some aspects of concrete operational thought (e.g., the ability to classify objects and reverse operations) but may, at times, show signs of egocentric thought, which is prevalent at the preoperational stage of development.

Before examining Piaget's stages of cognitive development, it is necessary to explicate key terms that are central to his theory: *schemes*, *physical knowledge*, *logico-mathematical knowledge*, and *social or conventional knowledge*.

Schemes

People of all ages, including babies, have a tendency to organize knowledge of their environment into what Piaget refers to as schemata, or **schemes**. Schemes consist of physical actions, concepts, and theories that children use to gain information about their world. They are **mental structures** in the brain that underlie an individual's intelligence. For example, young infants have particular schemes for interacting with their favorite rattle; they know how to grab it and thrust it in their mouth. By the same token, an 8-year-old child might possess a particular scheme for writing that includes both print and cursive letters, and a 5-year-old child who has had both urban and suburban experiences might possess a broad scheme that includes knowledge of both domestic animals (cats and dogs) and farm animals (cows and sheep).

Piaget believed that when learning occurs, unobservable changes in an individual's cognition occur as well; a person's schemes are modified and refined. It is logical to assume that the older an individual becomes and the more experiences he or she gains, the more extensive the person's mental structures become. However, it is also important to remember that the schemes of very young children primarily comprise physical actions; children between birth and age 2 learn about the world primarily through their senses and motor abilities. As children develop, their schemes expand to include a range of mental

Table 4.1

Piaget's Theory of Cognitive Development

Developmental Stage/Age Range	Stage Characteristics	Major Milestones
Sensorimotor Birth to 2 Years	Infants' knowledge of the world is derived primarily from their senses and motor abilities.	Infants begin to think through mental actions and acquire the skill of object permanence. People/things still exist even when they are not in the infant's sight.
Preoperational 2 to 6 Years	Children's thinking is primarily egocentric; they tend to view the world from their own perspective.	Imaginative thought, vocabulary, and language explosion lead to young children's self-expression and increased sociability.
Concrete Operational 6 to 11 Years	Children's thinking is limited to concrete experiences, what they can see, hear, touch, and directly experience. They begin the process of applying logical operations and principles to interpret the world.	Children are able to comprehend concepts of conservation, number classification, and scientific theory through the application of logical thought.
Formal Operations 12 Years Through Adulthood	Adults and adolescents enter into the realm of analytical thinking; their reasoning ability is characterized by abstractions, hypothetical ideas/thoughts.	Adults and adolescents think broadly and theoretically about ethical/moral issues and politics.

operations, concepts, and theories that are largely facilitated by language. For instance, children become increasingly more adept at using symbol systems (e.g., language, numbers, sign language) to organize schemes of an abstract and complex nature.

Piaget's Three Types of Knowledge

Children simply do not wait to be instructed in knowledge but are always busy making sense out of every single thing that they encounter. It was Piaget's preoccupation with how children acquire knowledge that led him to distinguish between three types of knowledge: physical knowledge, logico-mathematical knowledge, and social or conventional knowledge.

According to Piaget, **physical knowledge** is knowing the physical properties or attributes of an object, such as the number, size, shape, and color. For example, a young child may know that balls roll but books do not, and an older child might know the properties of a pencil, such as its color and shape. Physical knowledge is best gained by individuals acting on objects, experimenting with objects, and carefully observing reactions.

Logico-mathematical knowledge, on the other hand, entails the mental construction of relationships between things. For example, a 6-year-old child may know that six marbles, which can be observed and counted, are also represented by the word *six* and the numeral 6. Likewise, a preschooler who observes a blue crayon and a red crayon recognizes the difference between the two crayons when they are placed side by side. Logico-mathematical knowledge is dependent upon physical knowledge for its construction, and vice versa.

Social or conventional knowledge has its roots in social conventions that are created by people. The 26 letters of the alphabet, mathematical words and signs, musical notations, social and moral conventions like taking turns when engaged in a conversation, the creation of chairs to sit on, and designating the second Sunday in May as Mother's Day are all examples of social knowledge. However, social knowledge, for the most part, is arbitrary. For example, some people may celebrate Mother's Day, and others, perhaps due to their particular religious beliefs, may not. Piaget recognized that social or conventional knowledge is partly derived from individuals' encounters with other people; children require input from others in order to build their social knowledge.

Cognitive Equilibrium

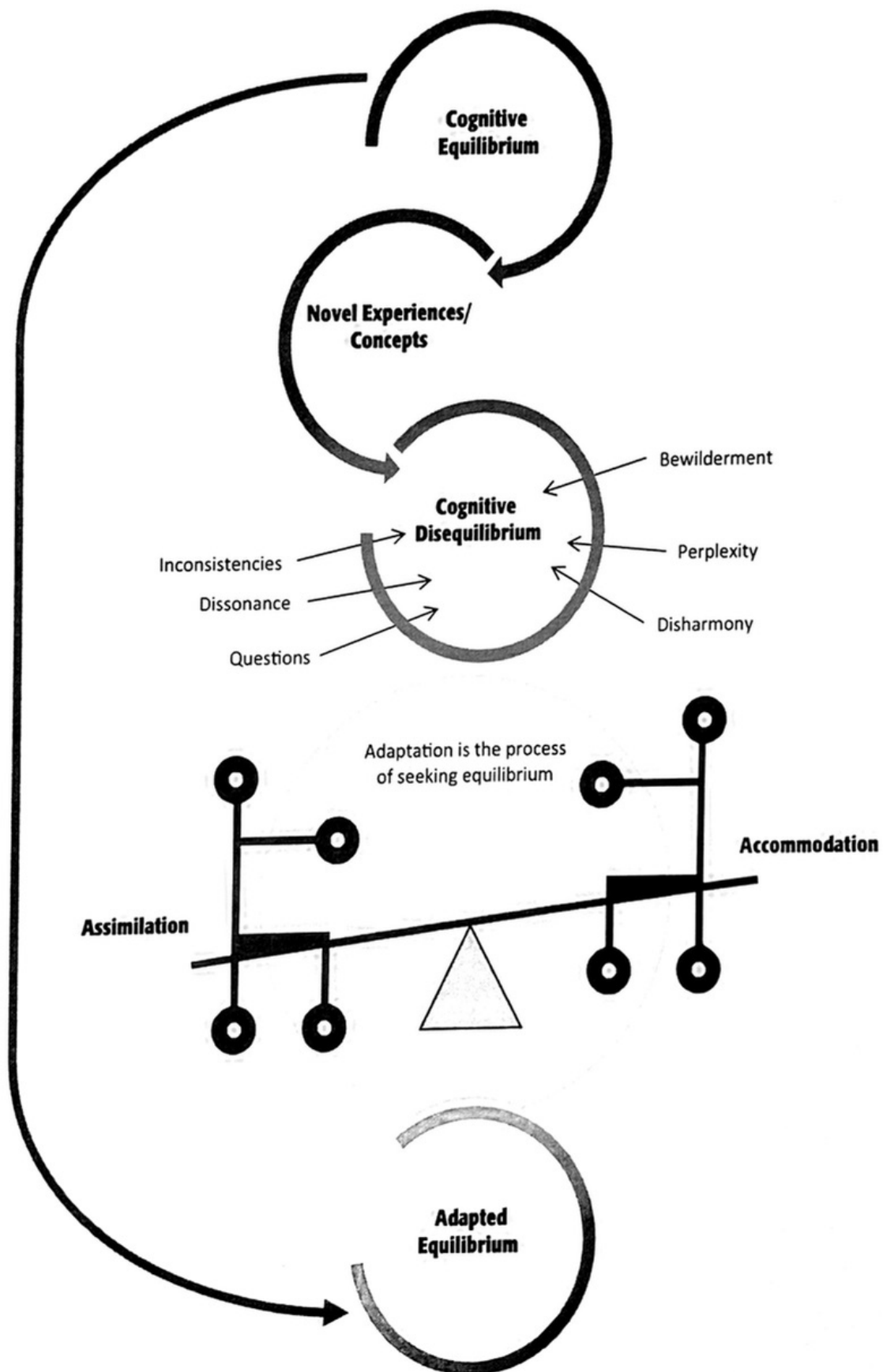
The concept of **adaptation**, which is a very important concept in human biology, is also central to Piaget's theory of cognitive development. With regard to human biology, adaptation is the evolutionary or change process whereby an organism becomes better suited or adjusts to its habitat. And in much the same way that our bodies adapt to our immediate environment, our mental structures adapt in order to better represent our external world. Also, through a process referred to as **organization**, children reorder and connect new schemes to other schemes in order to create a more elaborate scheme or cognitive system.

As a cognitive theorist, Piaget believed that individuals are always engaged in the process of achieving some degree of **cognitive equilibrium**, or mental balance. The tendency for people to achieve some balance among their mental structures or schemes is innate, and it is the state of **disequilibrium**, or imbalance, that continuously motivates us to adapt our cognitive structures in order to restore balance. The state of disequilibrium is a most dissatisfying and undesirable mental state. Piaget, therefore, maintains that individuals use two complementary processes to achieve a state of cognitive balance: assimilation and accommodation. Through the process of **assimilation**, children utilize new experiences to fit preexisting schemes. In assimilation, children interpret novel or new experiences through an old lens, so to speak. For example, a young child who has never seen a cow may refer to the cow as a big dog with funny spots. The process of assimilation is not a passive one; the child is earnestly trying to modify or reinterpret the new experience to fit his or her existing mental scheme.

On the other hand, when children encounter a new task or experience that does not fit into their existing scheme, they are compelled to alter their old way of thinking and acting in order to accommodate or fit the new information into an already existing scheme—or they may be forced to create a brand-new scheme. Thus, in the case provided above, children may simply expand their existing scheme to include “cow,” or they might create a brand-new scheme (e.g., farm animals) once they figure out that the farm animal is not a dog but a cow. **Accommodation** requires more mental activity and energy than assimilation because new concepts and experiences may not always fit into preexisting cognitive structures. Accommodation can only occur if the new idea or task that the child is confronting is only slightly discrepant with his or her existing mental scheme; an idea or a task that is too discrepant will not be accommodated. Under these circumstances, the child does not have an available mental structure to interpret the new information or experience (Meece & Daniels, 2008). When accommodation does occur, intellectual growth advances, and the child is promoted to the next stage of cognitive development. In short, cognitive equilibrium is the ongoing process of striking a balance between assimilation and accommodation (see Figure 4.1).

Figure 4.1

The Processes of Assimilation and Accommodation





The processes of assimilation and accommodation begin very early in the life of the young infant.

Piaget proposed that cognitive development progresses in a predictable sequence from infancy through adolescence for all human beings. The periods or stages are age-related, and each period promotes a particular way of thinking and behaving (Inhelder & Piaget, 1958; Piaget, 1952). Additionally, children meet important developmental benchmarks at each stage of cognitive development. According to Piaget, there are four stages of cognitive development: (1) sensorimotor, (2) preoperational, (3) concrete operational, and (4) formal operational.

Sensorimotor Stage

The first stage, **sensorimotor**, spans the first 2 years of a child's life (see Table 4.2). This is the period when children's mental structures are developed largely through their senses and motor reflexes. The range of children's reflexive behaviors assists them in building their knowledge and understanding of the world. Infants have an extensive repertoire of reflexes (a total of 18 in all), some of which are absolutely necessary for their survival (e.g., sucking and breathing). Young infants, for example, use their sucking reflex not just for feeding, but to learn about the world. Initially, everything fits the child's existing "suckable scheme." As the child grows and is introduced to table food, it is likely that he or she will need to create a brand-new scheme in order to gain nourishment, since chewing requires different, specific mouth and tongue movements.

The period of sensorimotor development is so rife with developmental changes that Piaget found it necessary to divide the period into six substages: (1) reflexive schemes, (2) primary circular reactions, (3) secondary circular reactions, (4) coordination of secondary circular reactions, (5) tertiary circular reactions, and (6) mental representation. As you can see from Table 4.2, each substage provides evidence of continuous interaction between the child's brain, senses, and motor functions; the child is viewed as an active being. Over time, young infants become increasingly adept at coordinating a variety of movements to learn about the world around them.

The first 24 months are an exciting time for young infants. By the end of children's first year of development, they often appear as amateur little scientists, regularly flirting with the method of trial and error. The older they get, the more abbreviated the process of trial and error; older children at this stage are capable of solving problems more expeditiously in comparison with their younger peers. Also, these children are just beginning to participate in **deferred imitation**, the ability to imitate the behaviors of others who are not present, and **make-believe play**, the process of acting out common, everyday experiences and imaginary activities.

By the end of the sensorimotor period, children achieve two major competencies: (1) goal-directed behavior and (2) object permanence. When young infants engage in **goal-directed behavior**, they are more expansive, creative, and intentional—meaning they are deliberate in their

Table 4.2

Piaget's Sensorimotor Substages

THE FIRST TWO YEARS OF LIFE						
Sensorimotor Substage	Reflective Schemes (Birth–1 Month)	Primary Circular Reactions (1–4 Months)	Secondary Circular Reactions (4–8 Months)	Coordination of Secondary Circular Reactions (8–12 Months)	Tertiary Circular Reactions (12–18 Months)	Mental Representation (18 Months–2 Years)
Characteristic Behaviors	Newborn behavior is reflexive in nature—rooting, sucking, grasping, etc.	Limited ability to anticipate events; motorized actions centered on the infant's own body	Motorized actions are repetitious—aimed at interesting effects in the infant's world	Increased anticipation of events; goal-directed behavior; object permanence; imitative behavior	Exploration of the properties of objects; increased imitation of novel behaviors; relentless search for hidden objects—infants will search for an object in many locations	Mental representations of objects and events; deferred imitation; make-believe play; basic problem solving—ability to find an object that was moved while out of the child's sight

coordination of behavioral schemes as a means to an end. They will intentionally and repeatedly use their coordinated schemes (e.g., hand and arm movements) to manipulate a favorite toy, just to hear its interesting sounds and see its blinking lights. Children's goal-directed behavior comes as a result of their awareness of cause and effect, improved memory, and increased understanding of people's intentions (Behne, Carpenter, Call, & Tomasello, 2005; Willatts, 1999). **Object permanence**, on the other hand, which begins to emerge around the time a child is 8 months old, entails children's basic understanding that objects or people still exist even when they can no longer see them. The child who achieves an understanding of object permanence is unlike his or her 8-month-old peer who relates to objects and people in an out-of-sight, out-of-mind fashion. Children around this age will soon cease to search for an object that is out of sight. However, a 22-month-old will intentionally use a number of coordinated schemes to search for a ball that has rolled under the bed until he or she finds it. This type of action conveys both goal-directed behavior and the child's acquisition of object permanence.

Early childhood professionals providing care for infants and toddlers during the sensorimotor stage of development can foster children's learning by playing games like peek-a-boo, pat-a-cake, and hide-and-go-seek with them, and by providing them with wide-open, stimulating, and safe environments that foster active exploration.

Preoperational Stage

Children between the ages of 2 and 6 years are said to possess what Piaget referred to as **preoperational intelligence**. The preoperational stage of development is an exciting period,

marked by significant childhood competencies such as increased language facility, **representational thought** (the young child's ability to internalize visual experiences and maintain mental imagery of things not present), and an enhanced ability to engage in both deferred imitation and make-believe play. However, there are also limits to children's thinking during this stage of development. Children tend to be quite **egocentric** (self-centered) with regard to their thinking ability. Egocentric thinking is often defined as children's inability to consider other perspectives. Children at this phase of development will, undoubtedly, focus on a particular aspect of a situation without taking other aspects of the situation under consideration. For example, it is hard for a child at this stage to understand that "Daddy" can be a brother or husband because the child is singularly focused on the role that his or her father plays in his or her life. Children's thinking during this stage is focused on appearance to the exclusion of other factors.

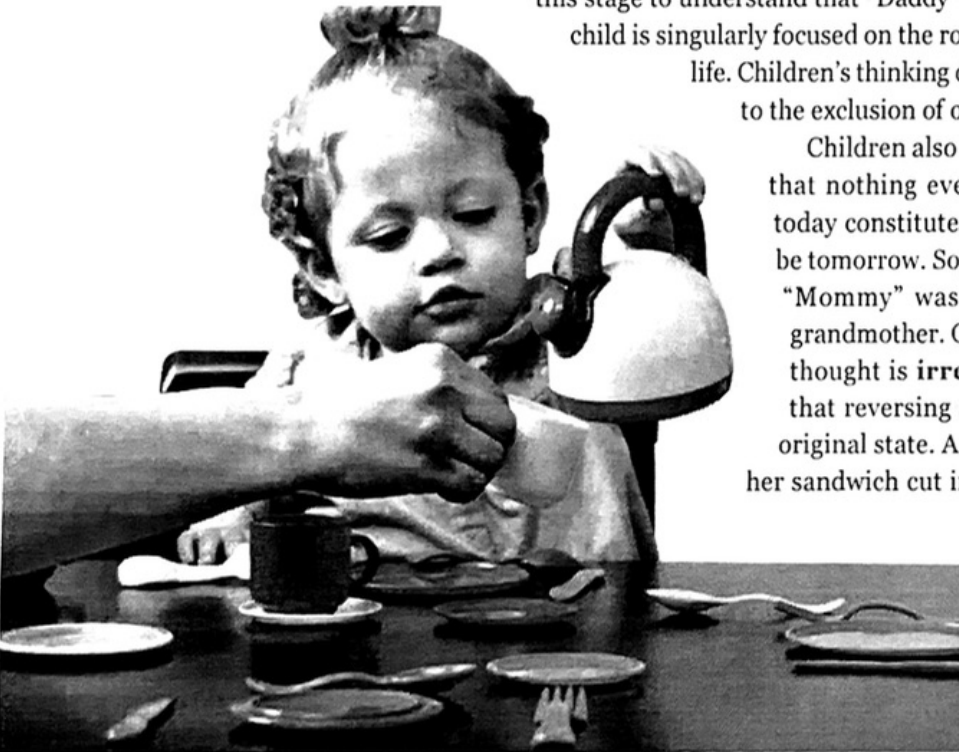
Children also engage in **static reasoning**; they think that nothing ever changes. Therefore, whatever exists today constitutes what it was yesterday and what it will be tomorrow. So, for example, a child might contend that "Mommy" was never a little girl or will never be a grandmother. One final characteristic of preoperational thought is **irreversibility**, the ability to understand that reversing an action or a process restores it to its original state. A 3-year-old child who doesn't like his or her sandwich cut in two will have an absolute fit when he or she sees the two halves. Any attempt to place the two halves closely together on his or her plate in order to create the illusion of wholeness is futile. Preoperational children focus on the one feature: the "divided sandwich." They do not think reversibly or consider the fact that by simply putting

the sandwich halves back together again, the sandwich, for all intents and purposes, is whole once again!

In order to test the limitations of children's preoperational thinking, Piaget devised several experiments in **conservation**, the fact that something remains the same regardless of changes in its form or appearance. These classic landmark studies in conservation have greatly enhanced our understanding of children's reasoning abilities during the preoperational stage of development. In one classic experiment, children were shown two identical glasses with the same amount of liquid in each (Piaget, 1952). The liquid of one was poured into a tall narrow glass (see Table 4.3). When children were asked whether one glass contained more liquid than the other or if they both contained the same amount of liquid, children insisted that the tall narrow glass contained more liquid. Children's responses to the questions were all characteristic of preoperational thought. They failed to realize the conservation of liquids by centering their thoughts exclusively on appearance; they attended only to the immediate condition or state (**static reasoning**), and they did not consider the possibility of reversing the process. Children tended to focus solely on the higher level of liquid in the taller, narrower glass.

Nevertheless, children's use of language and symbolic thought processes is a hallmark of the preoperational stage of cognitive development. Teachers who work with children in the preoperational stage of development can best promote their learning by providing numerous opportunities for language development, such as reading, writing, and speaking activities; experiences in exploration;

Imaginary play is the cornerstone of young children's intellectual growth and the very beginning of children being at home in the world. It is through children's imaginary play that they begin to use symbols and words to make sense of their surroundings.



and opportunities in creative art expression and working with a range of manipulative materials.

Concrete Operations Stage

During the **concrete operational period**, which usually occurs between the ages of 6 and 11 years, children tend to use increasingly more mental operations that involve symbols and images, and they are even capable of reversing operations. In other words, at this stage in children's cognitive development, they recognize that things can return to their original state. In the case of the liquid conservation experiment described above, the concrete operational child recognizes that the amount of liquid does not change by one simply pouring the liquid from a shorter, wider glass into a taller glass. Mentally, children are able to reverse the operation in their head to provide a correct response to the question "Which glass has more?" During this crucial developmental period, children are also less egocentric and are able to apply logical thinking to operations that are concrete, or visible and tangible. One important logical concept that children master during this stage of development is **classification**, the organization of things into some group or class based on a certain characteristic. As children grow older, they are more precise and flexible when engaged in classification tasks. During middle childhood, children use mental categories and subcategories flexibly, inductively, and simultaneously (Hayes & Younger, 2004). Children become adept at using many subcategories when categorizing or classifying. For example, food can be separated into various categories such as fruits, vegetables, meats, and grains.

Some **pedagogical techniques** or teaching methods that teachers can use when instructing children who are in the early stages of concrete operations are experiences in classification that are increasingly more sophisticated, tangible examples to explain complex phenomena, opportunities to engage in the scientific exploration and manipulation of materials, and presentations that are brief and well organized.

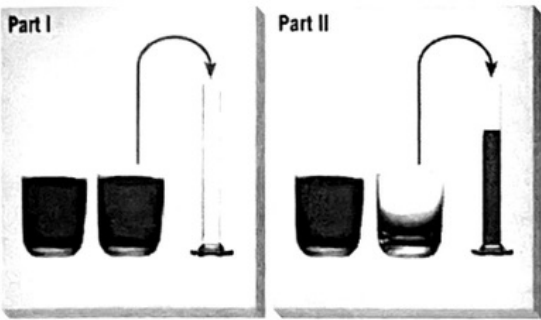
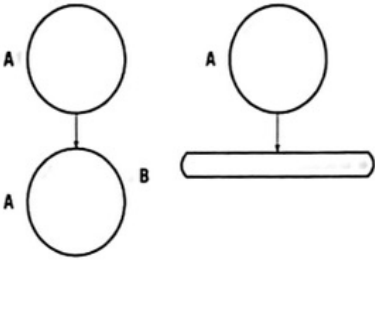
Formal Operations

Piaget's fourth and final stage of development, **formal operations**, begins at age 12 years and continues throughout the life span. During this period, adolescents and adults effectively consider abstractions and hypothetical situations and are able to reason analytically—as opposed to children in the stage of concrete operations who reason logically but only about direct experiences and perceptions. This is the stage in which you currently find yourself and where most of your mental operations are executed. All of us, however, at times revert to the use of mental processes that are characteristic of previous stages. For example, adults may use their sensorimotor intelligence (sense of touch) to feel a sweater's fabric in order to determine its suitability for their wardrobe. Still others may engage in concrete operations by using their fingers to count the days remaining in a given month.



Young children love singing and finger-plays. Pat-a-cake helps to foster children's language development and social skills.

Table 4.3 Piaget's Conservation of Volume, Mass, and Number Tasks

Conservation of Volume	Conservation of Mass	Conservation of Number
Piaget's Conservation Tasks 		

Limitations of Piaget's Theory

Non-Piagetian research has proven that Piaget clearly underestimated the intellectual capabilities of young children, especially infants. Over the years, his work in cognitive development theory has ignited both criticism and praise from developmentalists and other researchers in related fields (education, psychology, etc.) (Bjorklund, 2005). For example, we now know that infantile intelligence is quite significant at birth and that this quality is evident even before infants are capable of moving about, which Piaget found to be an essential ability that leads to increased knowledge. Also, numerous studies have found young children in the preoperational stage of development to demonstrate the ability to think more concretely or to function at the concrete operational stage of development. For instance, children's nonverbal gestures demonstrated their capacity to engage in complex classification tasks during play. Their words demonstrated a deficit in classifying, but their actions showed something entirely different (Halford & Andrews, 2006). Research has found children to be more cognitively competent and capable of being trained to use both concrete and formal operations than Piaget once claimed. Young children can manifest complex cognitive functioning and are generally less homogeneous with regard to their reasoning ability than Piaget originally thought (Bjorklund, 2005). Researchers have also found that children during the preoperational stage of development are not as egocentric in their thinking as Piaget once contended; children can be quite sensitized to the thoughts, wishes, and emotions of other people. Furthermore, we now know that children's knowledge during the preoperational phase of development can be bound by culture. For example, there is evidence of wide variation in the timing of children's acquisition of conservation concepts across cultures, which appears to be linked to the relative weight placed on conservation activities (e.g., children's exposure to conservation activities within society) (Berk & Winsler, 1995).

Perhaps the limitations with regard to Piaget's cognitive development theory were the direct result of his approaches toward studying young children. As mentioned earlier, Piaget based most of his conclusions regarding children's thinking, especially during the sensorimotor period, on what he observed in his own three children. Researchers agree that one major problem with Piaget's

The Practice of Research and Theory

We All Scream for Ice Cream

During the middle years, the child becomes less egocentric in his or her thinking and increasingly adept at using logic flexibly. In one study, children between the ages of 5 and 9 years were asked their opinion of two hypothetical boys: one boy who liked chocolate ice cream and another who thought chocolate ice cream to be yucky. More than 60% of the 5-year-olds thought that the boy who didn't like chocolate ice cream was stupid or bad. Conversely, more

than 90% of the 9-year-olds thought that both boys could be right and were less critical of the boy who didn't like chocolate ice cream. As children grow older, they are more willing to accept other people's opinions and individual beliefs.

Source: Wainryb, C., Shaw, L. A., Langley, M., Cottam, A., & Lewis, R. (2004). Children's thinking about diversity of belief in early school years: Judgments of relativism, tolerance, and disagreeing persons. *Child Development*, 75, 687-703.

investigative technique was that it was highly subjective. Additionally, contemporary researchers view his method and very limited sample size (three children) as problematic. Furthermore, there are concerns with regard to the "fidelity and credibility" (Bornstein, Arterberry, & Mash, 2005, p. 287) in collecting data on infants. Modern researchers today employ various statistical methods and appropriate sample sizes, as well as other research techniques (e.g., the use of fMRI [functional magnetic resonance imaging] to measure infants' brain activity) to avert such problems (Berger, 2011; Hartmann & Pelzel, 2005).

Regardless of the limitations to his theory, Piaget's fascination with children's thought processes and their acquisition of knowledge sustained his expansive work in developmental psychology for almost 60 years, giving rise to a very prolific career.

WHAT IS INFORMATION PROCESSING THEORY?

Information processing theory is antithetical to Piaget's theory of cognitive development. Piaget's theory focuses on distinct stages of cognitive development, whereas information processing theory provides a step-by-step description of thought processes occurring at every age. In the past 30 years, information processing theory has become the leading strategy for studying children's cognitive development (Klahr & MacWhinney, 1998). Information processing theory emphasizes how children learn a particular thing; it focuses not on theories but on details of the learning process, such as the sensory data input, connections made in the brain, stored memories, retrieval of information, and output. This theory uses the computer as a model for human thinking in that it assumes data enter the brain through the five senses and are processed, giving rise to some kind of behavioral response, or the data are stored for later retrieval. So, for example, an infant's output might take the form of waving bye-bye, moving a shoe to uncover a toy, or gazing at a large picture that resembles a human face. By the same token, an 8-month-old who is crying because of hunger will cease crying once the child recognizes the mother's familiar actions that signal she is preparing to feed him or her. The people, places, and things in the child's environment afford the infant numerous opportunities to perceive and then act. Eight-year-old children are better at information



Consider This Cultural Transmission

Martin, a teacher in the Children's Center, watched carefully as 4-year-old Kyla Ann entered the preschool classroom, running directly to the dramatic play area. Immediately, she put on an apron and rolled up her sleeves. Kyla Ann then picked up a dishcloth and pretended to wash the plastic dishes in the sink. After washing each dish, she carefully placed each one on the counter adjacent to the sink. Kyla Ann then grabbed a towel and began to dry each dish very meticulously. Kyla Ann's observable behavior was clearly reminiscent of an adult handling expensive china. When we carefully observe children's behavior, it is often indicative of the transmission of culture, whatever their respective culture happens to be. Kyla Ann's handling of the dishes was indicative of a very specific ("dish-drying") technique

that she learned after observing a significant person in her life engaged in the behavior over time. Well-provisioned early childhood classrooms include cultural artifacts, not just in the dramatic play area, but in every area of the early childhood classroom. When we provide cultural tools, instruments, and artifacts that are invariably found in children's homes, local stores, communities, and so on, we provide consistency and relevancy for children as they engage in learning.

What type of artifacts would you consider including in your future classroom? What are your thoughts about the early childhood classroom becoming an extension of children's personal worlds and how best to achieve this in very diverse contexts?

processing; they are better at retrieval strategies and analysis of data than their younger counterparts. Nevertheless, **perception**, defined as the mental processing of sensory data, is an active cognitive process that is highly selective in both children and adults. The brain recognizes a particular sensation, perhaps a result of the individual's past experience.

WHAT IS VYGOTSKY'S SOCIOCULTURAL THEORY OF DEVELOPMENT?

Western educators have only recently embraced Lev Semyonovich Vygotsky's pioneering work from the 1920s and 1930s in the area of sociocultural theory. Over the past 20 years, Vygotsky's theory has been gaining popularity among early childhood educators and researchers alike. Vygotsky's **sociocultural theory** asserts that an individual's development can only be understood in the context of his or her social and cultural experiences; there is always a dynamic interplay between one's sociocultural context and one's personal development (Rogoff, 2003). According to Vygotsky's theory, also referred to as the sociogenesis of cognitive development (Yu & Bain, 1980), knowledge, or how it is that we come to know things, is socially constructed. "What we know is inextricably bound to when and where we know it" (Grave, 1993, p. 2). In other words, cognition, or the development of mental structures, is consummately social in nature.

The Vygotskian sociocultural perspective, which also places emphasis on how children construct knowledge, is distinctly different from Piaget's perspective. Piaget's theory focuses on the individual's attempt to make sense of the world on his or her own; knowledge is always constructed, in part, according to the child's already developed mental structures (Weber, 1984). Vygotsky, however, moves away from Piaget's individualism by placing a great deal of emphasis on the child's sociocultural context. Thus, Piaget is often described as being a cognitive constructivist theorist, and Vygotsky as a theorist of **social constructivism**.

According to Vygotsky, “Any function in the individual’s psychological development appears twice, initially on the **interpsychological**, or social plane [between people] and then on the **intrapsychological** plane [within the individual]” (Vygotsky, 1978, p. 57). In other words, learning first occurs between people; it is an externalized social process. Then, the learning is internalized. This process applies across the board in all areas of the child’s intellectual functioning, such as voluntary attention, logical memory, and the formulation of concepts.

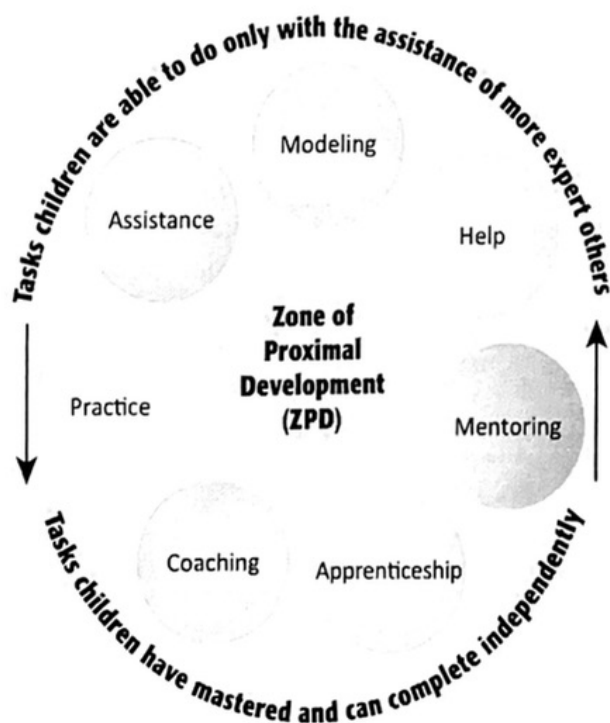


According to Vygotsky, cognition is consummately social in nature; information is passed on to children by more expert others in their environment.

Zone of Proximal Development

Vygotsky coined the term *zone of proximal development* (ZPD, as introduced in Chapter 2) to further explain the internalization process. The ZPD is the distance between the child’s actual developmental level, as determined by what the child is able to do independently, and the child’s potential level of development, as determined by what the child can master under adult guidance or in collaboration with a more capable peer (see Figure 4.2). Within the ZPD, intrapsychological functioning represents mental processes that are mature. Such mental processes constitute tasks that children can do independently or concepts that they fully understand. With regard to the interpsychological plane, mental processes are not fully mature but still unfolding. Therefore, children functioning on this psychological or social plane will require adult assistance or guidance in order to fully engage in a task or to acquire an understanding of a particular concept. For example, a 5-year-old who is just learning how to tie his or her sneaker laces will need the assistance of an adult in the process. Children might need to see the adult model the task several times, and/or they may need several practice runs with the adult before they can tie their sneaker laces independently.

Figure 4.2 Zone of Proximal Development Diagram



When engaging in tasks like learning to tie laces, both the child and the adult are likely to enter the problem-solving situation with their own subjective thoughts about how to best proceed or approach the task. When engaged in problem-solving tasks or operating in the ZPD, both the child and the more capable other must arrive at a place of **intersubjectivity**, which is a shared understanding or a mutually agreed upon way of approaching a task. Intersubjectivity is evident in this chapter's opening vignette, which describes the parent and child engaged in the joint task of stringing beads of varying shapes and sizes. When a mutual understanding is achieved between the child and a more capable other, learning is facilitated.

The amount of assistance and support that the adult provides the child within the ZPD is always changing because the adult is sensitive to the abilities of the learner and responds accordingly. This changing level of support during a teaching-learning situation is called *scaffolding* (see Chapter 2). The more capable other provides more assistance and support during the initial phase of the task (when the task is new) and begins to gradually withdraw support as the child becomes increasingly more capable. For example, a father who is teaching his young daughter how to ride a bike will initially assist the child by holding on to the child's handlebars in order to help her maintain her balance. As he provides support by encouraging her to pedal, he begins to roll her along more swiftly.

It may take several trials before he can safely remove his hands from the handlebars altogether. Eventually, the father removes his hands from the handlebars after witnessing his daughter's increased mastery in balancing her weight and pedaling. This process, which may take several trials before the child fully masters the technique of bike riding, requires patience and flexibility on behalf of the more capable or expert other.

In scaffolding, the child is seen as the edifice under construction, and the child's social environment and experiences (more experienced others, teaching tools/materials) scaffold or build the child up so that he or she can achieve new and improved competencies. The term *scaffolding* is also recognized in the research as a "**tutorial intervention**" (Wood, Bruner, & Ross, 1976, p. 89), **guided participation**, and **apprenticeship learning**.

Teachers of young children who understand the importance of scaffolding children's development are warm and responsive to the child's needs and strengths, flexible and willing to allow the child to self-regulate the joint problem-solving task as much as possible, and willing to assume the role as "learner" rather than "teacher" at appropriate times. They assume the role of facilitator or coach; use a range of distancing strategies (questioning techniques) and other techniques, such as gesturing (e.g., prompting, pointing, modeling); and use authentic assessments, including engaging children in group projects, task analysis, and peer group evaluations to assess students' understanding (Berk & Winsler, 1995).

Collaborative Learning

Sociocultural theory emphasizes the importance of **collaborative learning** (group learning) in early childhood classrooms. Students are quite influential at impacting each other's cognitive structures; they support one another and encourage new ways to think, construct ideas, and reflect on novel material. Teachers who engage young elementary school children in collaborative learning experiences must create ideal circumstances that foster children's passion and achievement of a common goal and the various groups' functionality. Cooperation and aspects of the group's culture and diversity are essential elements for successful group learning. The breadth and scope of children's wide-ranging contributions to the group provide a more comprehensive view of the material to be learned, significantly advancing children's knowledge base.

The parent and child engaged in learning how to ride a bike is an example of learning in the Zone of Proximal Development.



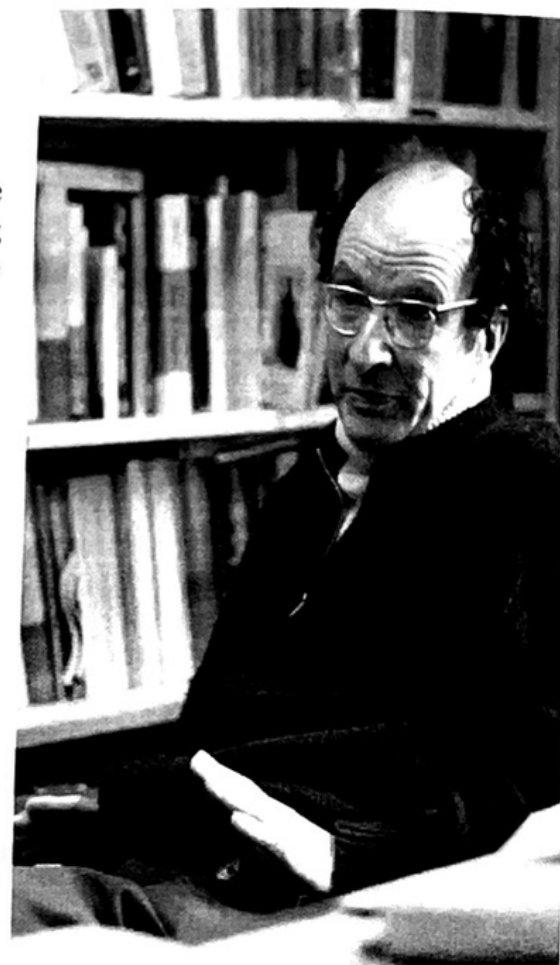
Vygotsky's sociocultural theory and its related concepts have made appreciable advances in the early childhood community's understanding of the interconnectedness between children's engagement in legitimate sociocultural activities and their subsequent development.

WHAT IS BRONFENBRENNER'S BIOECOLOGICAL THEORY OF DEVELOPMENT?

Urie Bronfenbrenner, like the theorists before him, was acutely aware of the importance of caring adults in the lives of young children when he developed his theory in the late 1970s. Bronfenbrenner's early experiences working alongside his father at a mental institution for young children provided the seeds for his theory of the **ecology of human behavior** and his later work as a staunch advocate for the obliteration of social and political practices that negatively impact children and families. Recently, Bronfenbrenner's theory has been renamed **bioecological systems theory** in order to emphasize the importance of the child's own biology as a primary factor in the interplay between the child and his or her environment, and the environment's crucial role in fueling the child's development (see Figure 4.3).

One might agree that the popular cliché "It takes a village to raise a child" underscores the very essence of Bronfenbrenner's bioecological systems theory. According to him, educators and developmentalists need to fully consider all of the various systems that surround the development of the child. For instance, a child's ability to read may be just as contingent upon the teacher's pedagogical skills as it is upon the quality of the relationship between the child's school and home. Bronfenbrenner's concept of the various layered environmental systems that make up society can be described as a set of seriated toy cups, like the ones that can be found in most infant/toddler classrooms today. Each cup can be nested neatly in another until all of the cups of various sizes become one large cup—but with many layers. These environmental systems, according to Bronfenbrenner, are constantly unfolding over the course of the child's development, impacting his or her total being, as well the existence of the adults around the child.

Bronfenbrenner greatly increased our understanding regarding the impact of the immediate environment and the social landscape on the developing child and his or her family.



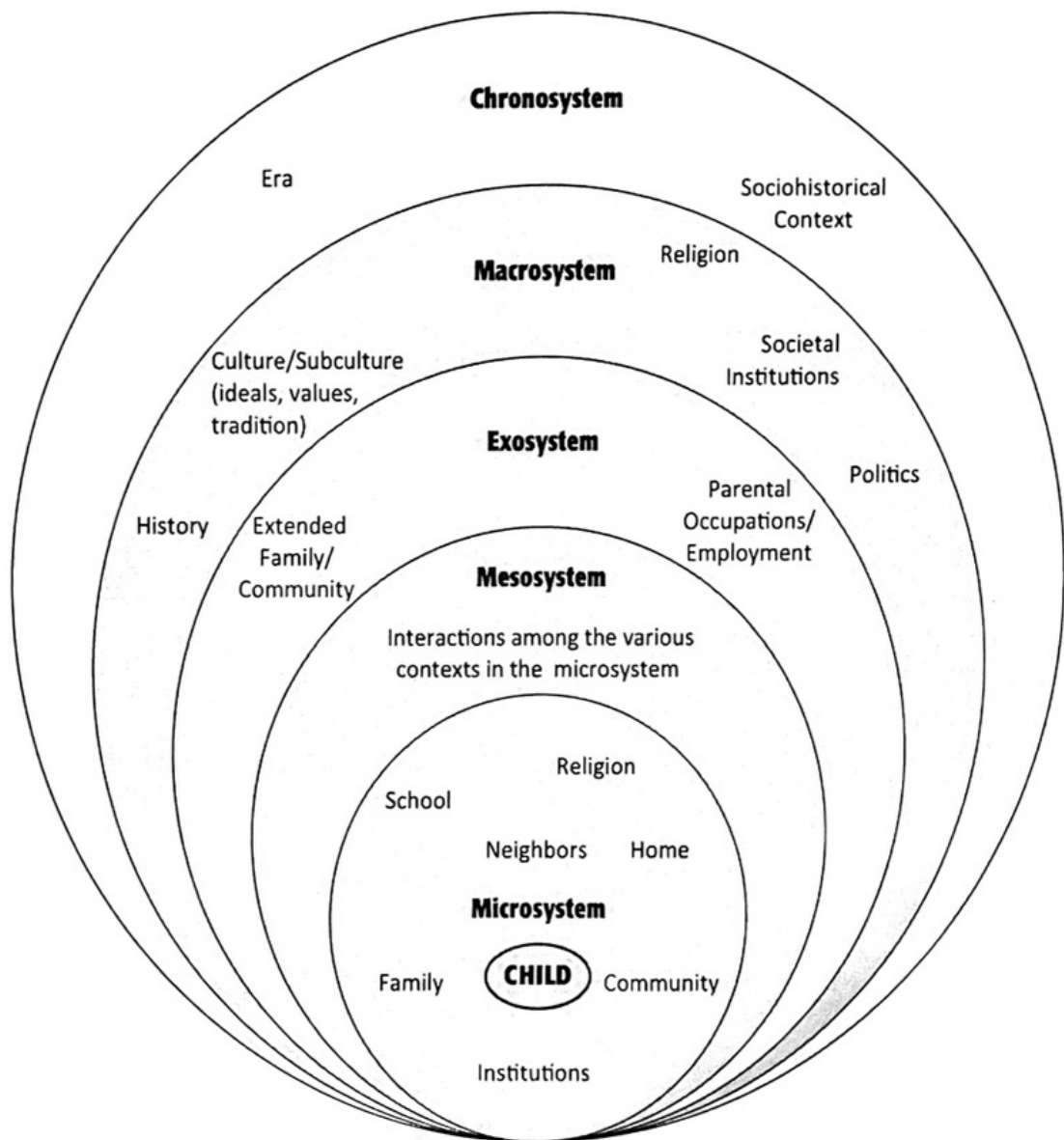
BEST Practices Scaffolding Children's Development: The First Dance

Effective teachers of young children use the technique of scaffolding when engaging young children in a teaching-learning task. Rather than allowing children to accomplish only those tasks that they can do independently—without assistance from a more capable other—intuitive teachers who are also deliberate and intentional in their teaching style recognize that children, invariably, are capable of functioning on a higher developmental plane when they are appropriately challenged and afforded the right degree of

assistance and support. Teachers who effectively spur children's thinking prowess are adept at providing just the right amount of support to children when they are engaged in a challenging task. Such teachers provide elevated levels of scaffolding support when children need additional help and shrink back when children begin to demonstrate mastery of a given task. This choreographed interplay is the first of many dances that children will have with a more expert other.

Figure 4.3

Bronfenbrenner's Bioecological System of Development



Bronfenbrenner's theory consists of three nested systems: (1) microsystems, (2) exosystems, and (3) macrosystems. The **microsystem** is the innermost level and comprises the child's immediate environment—the child's home, family, peer group, kindergarten classroom, religious institution, and so on. These are the settings in which the child has direct, personal experience. The **mesosystem**, on the other hand, constitutes the interactions or connections between and among the various settings at this and other levels, as well as the interactions between and among the various elements or settings belonging to the three systems. For example, an aggressive 7-year-old might be required by the school psychologist to participate in a special after-school program aimed at averting bullying behavior in young elementary school students. Bullying concerns evident in the larger social context (at the local school) can impact children who may be already primed for aggressive behavior, in one way or another.

The **exosystem** consists of events that might influence the child's development but only indirectly. For instance, a single parent who has recently been laid off might drift into a state of depression, which may ultimately impact his or her parenting skills.

The **macrosystem** represents culture and the subcultures in which the child lives, including the ideals, values, and traditions, as well as regional identity. For example, some children growing up in the infamous town of Juarez, Mexico, today, which has been referred to by many as the "murder capital of the world," might grow to be very indifferent to pain, suffering, and death over time.

Bronfenbrenner recognized that familial interrelationships are modified with the passage of time, and that societal and sociohistorical trends can impact family life. The **chronosystem** recognizes the timing of these adjustments and the relative position of the child during these periods, including the impact of these changes on the developing child (Bronfenbrenner, 2005). For instance, during the housing boom at the turn of the 21st century, many working-class families realized the "American Dream" and were able to buy houses, thereby bolstering the family's socioeconomic status. However, by 2006, the incomes of many families plummeted due to the "Great Recession," and many of these same families lost their homes. Scores of children and their families became homeless for the very first time. When children lack a permanent residence and are forced to double up with other family members and change schools, such major transitions can have a deleterious effect on their growth and development over time. Thus, the child's well-being is closely tied to the various systems of which he or she is a part.

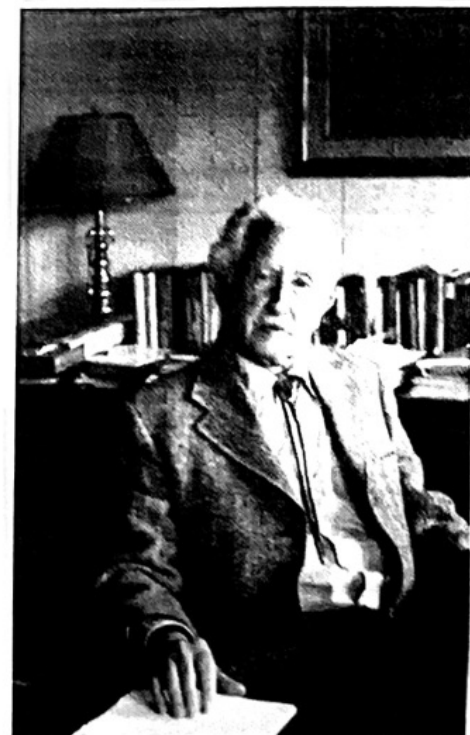
According to Bronfenbrenner, there are many influences that can impact the development of the child; however, being aware of these environmental influences is simply not enough. Careful consideration of the impact of these various systems on the child and his or her family should propel early childhood professionals to work in conjunction with families in creating public policy and practices that lead to the creation of social landscapes that clearly support and protect the sanctity of family life.

WHAT IS ERIKSON'S THEORY OF PSYCHOSOCIAL DEVELOPMENT?

Erik Erikson (1902–1994) contributed significantly to the field of human development (see Chapter 2). Erikson, a follower of **Sigmund Freud**, the father of **psychosexual development** who posited that the child's inner drives, urges, and unconscious wishes are the basis for children's thinking and behavior over their extended life, extended Freud's theory to include children's social context. Erikson viewed the human life span as consisting of various stages, each one involving a psychological crisis or conflict that requires a resolution. And while the crisis at each stage is presented in an either/or fashion, Erikson recognized that the resolution of the crisis at each stage led not necessarily to one extreme or the other but to somewhere in the middle. According to Erikson, there are eight stages of psychosocial development, which begin at birth and end in the twilight years of the adult's life (see Table 4.3). Please note that the chart delineates Erikson's theory in its totality, but for our purposes here, only Erikson's first four stages apply.

The first stage, **trust versus mistrust**, is the period between birth and age 1 year. During this period, children learn to trust their primary caregivers to address their basic needs for nourishment, consolation, warmth, and so on. Infants and toddlers who are not afforded responsive care soon learn to mistrust the care of others over time.

During the second stage, the child, who is usually between the ages of 1 and 3 years, must resolve the conflict of **autonomy versus shame and doubt**. Either children gain a sense of self-efficacy—they begin to feel self-sufficient in many activities like toileting, feeding, walking, and exploring—or they begin to doubt their abilities.



Erik Erikson's theory of psychosocial development consists of eight developmental stages, each presenting a unique challenge to the individual.

Professionalism & Policy

Federally Funded Head Start/ Early Head Start

Urie Bronfenbrenner bears the distinction of being a cofounder of the national Head Start program. Head Start, which has been in existence for more than 55 years, was one of the original federally funded War on Poverty programs of the mid-1960s. It was the first and only time that children's access to preschool education became a matter of social policy. Head Start and its later appendage, Early Head Start (which serves infants to children age 2), provide comprehensive services to young children and their families such as early childhood education;

assessment, placement, and educational planning for children who are atypically developing; social services; and mental/physical health and nutrition services that are both responsive and appropriate to each child's and family's developmental, ethnic, and linguistic heritage and experience. Although Congress continues to widely debate the need for continued funding support of the national Head Start and Early Head Start program, the efficacy of the program for families from low-socioeconomic-status backgrounds persists (Zigler & Styfco, 2004).

Children entering Erikson's third stage of psychosocial development, **initiative versus guilt**, are interested in adult activities; they are often interested in engaging in activities that exceed their abilities or the boundaries established by adults. For example, children at this age will put their shoes on the wrong feet, concoct messy sandwiches, make breakfast for "Mommy," or jump into the swimming pool. Children's initiation of tasks at this stage may be a source of pride or failure, with failure leading to guilt.

Erikson's fourth stage of psychosocial development is **industry versus inferiority** and includes children between the ages of about 6 and 11 years. At this stage, the outcome of the prior stage matters greatly. The child will either seek independence, becoming increasingly competent and productive at mastering certain tasks, or experience feelings of inadequacy.

Erikson recognized that the child's resolution of the crisis at each stage of development is predicated on such factors as the child's sociocultural context, the parents' child-rearing practices, and both the child's and the family's temperament.

WHAT IS MASLOW'S HIERARCHY OF HUMAN NEEDS?

Abraham Maslow, introduced in Chapter 2, conceptualized and devised a pyramid scheme to convey a **hierarchy of human needs**, which was prompted by his earlier work with primates (see Figure 4.4). One of the things that stood out for Maslow during his research with monkeys was that certain needs of the monkeys trumped, or took precedent over, others.

At the very basest level of the pyramid are the **needs addressing human survival**. These needs consist of food, water, and sleep. Maslow contended that the individual's primary needs must be met first before the person can even consider the challenges of addressing the needs presented at the next level. Thus, the assumption is that when a young child is hungry, it is impossible for him or her to concentrate in school or to learn effectively. When considering the logic of Maslow's

Maslow's hierarchy of human needs underscores the importance of tending to basic needs before addressing higher order needs.

Table 4.4

Erikson's Theory of Psychosocial Development

AGE	PSYCHOSOCIAL STAGE	PSYCHOLOGICAL CONFLICT/DILEMMA
Birth to 1 year	Basic Trust vs. Mistrust	Infants learn to trust others to meet their basic needs OR Mistrust develops
1 to 3 years	Autonomy vs. Shame & Doubt	Children learn to make choices and acquire agency OR Become uncertain and doubtful about their abilities
3 to 6 years	Initiative vs. Guilt	Children learn to initiate activities and acquire a sense of purpose OR They begin to feel guilty about their efforts at independence
6 years to Adolescence	Industry vs. Inferiority	Children are eager and curious OR They begin to feel inferior and become disenchanted
Adolescence	Identity vs. Role Confusion	Adolescents begin the process of acquiring their personal identity OR They become confused, misguided, and misdirected
Young Adulthood	Intimacy vs. Isolation	Young adults enter into committed relationships OR They become isolative and disenfranchised
Middle Adulthood	Generativity vs. Stagnation	Adults proliferate and nurture others OR They become self-centered and disengaged
Old Age	Integrity vs. Despair	Older adults engage in introspection about their life and emanate pride OR They feel regretful and resentful about how their life has transpired

hierarchy of needs, we can now fully understand why schools should implement free breakfast programs for children from low-socioeconomic-status (LSES) backgrounds. Everywhere today, schools provide a range of nutritional programs for children because these schools recognize that children need nourishment before they can successfully engage in learning activities.

Maslow's second level on the pyramid addresses the human **need for security and safety**. People of all ages need shelter, a sanctuary or home that makes them feel safe. Even infants and toddlers need to feel secure enough to use their range of sensorimotor skills to explore their



Children at Erikson's third stage of psychosocial development need to gain a sense of ambition and responsibility.

immediate environment. As children grow older and become adults, their basic need for safety and security can also become threatened. In the history of this country, there have been many incidences of catastrophic events and natural disasters that have seriously compromised people's sense of security and well-being. In the aftermath of Hurricane Katrina in New Orleans, Louisiana, in 2005, the situation grew even more chaotic as people dealt with the lack of basic shelter and safety. People of all ages and backgrounds committed a number of aberrant acts in a desperate attempt to survive and to achieve a certain degree of sanctity.

Maslow's third level on the pyramid deals with the social needs of people, the **need for belonging and love**. Both children and adults need to know that they matter and that someone cares. Urie Bronfenbrenner once said that children need the irrational involvement of people in their lives in order to become human; somebody has to be crazy about them (Bronfenbrenner, 1971). Children who feel rejected internalize their pain and feelings of worthlessness and begin to act out these emotions in a number of ways. These are the children who later become bullies and juvenile delinquents. In our day-to-day life, we exhibit the need for belonging in our desire to marry, have a family, and become a member of a community, church, fraternity, or bowling league, or even a member of a gang!

The fourth stage of Maslow's hierarchy of needs addresses the **need for achievement and prestige**. In our day-to-day life, the need for achievement and prestige is manifested in a number of ways, such as pursuing an academic degree, purchasing a house, or writing a book. This elevated level of human needs in Maslow's scheme represents our desire for self-respect and the respect of others. The young father who boasts about his recent promotion on the job and the young girl who points out to her mother her "perfect" spelling test pinned to the bulletin board are both experiencing the joys resulting from recognition from others.

At the very top of Maslow's hierarchy of human needs is the **need for self-actualization**. Children and adults who are self-actualized recognize their full potential and are motivated to become the very best that they can be. They have an enhanced sense of self-efficacy and self-worth. These are the children who are typically very excited about learning; they demonstrate what is referred to as **intrinsically motivated scholarship**. In such cases, children across the developmental spectrum learn for learning's sake and begin to rely increasingly less on external reinforcements in order to engage in learning.

While Maslow's theory has become incredibly popular, it has been criticized for its lack of empirical support; the theory was predicated mostly on his observations and intuitions about the human experience (Sheldon, Elliot, Kim, & Kasser, 2001; Smither, 1998). Maslow's theory also yields some discrepant themes throughout in that it is plausible for individuals to demonstrate needs from two or more levels simultaneously. Also, people who have had their basic needs met may not care to address their higher needs, and those whose basic needs have gone unmet may not always be destined to act out or to behave poorly. Furthermore, higher needs may, at times, supersede lower ones. For example, people who have dared to climb Mount Everest or who have walked across the country have obviously dismissed their need to be safe at home.

BURRHUS FREDERIC SKINNER

B. F. Skinner referred to his theory of operant conditioning as **radical behaviorism** because he wanted to distinguish it from John B. Watson's behaviorism, known as classical conditioning.

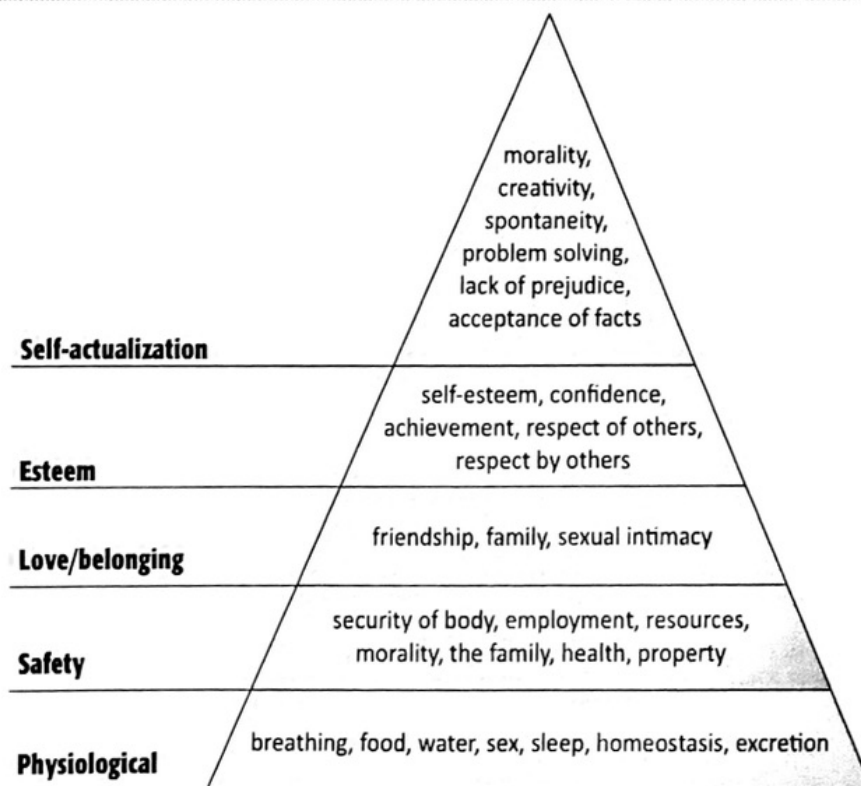
Classical conditioning is the learning process by which a meaningful stimulus (e.g., food) becomes connected to a neutral stimulus (e.g., a bell) again and again, until such time the neutral stimulus (i.e., the bell), alone, triggers the behavior (i.e., salivation in a dog). On the other hand, Skinner's operant conditioning (introduced in Chapter 3) is a type of behaviorism that is best described as a learning process by which a certain action is followed either by something that causes the behavior to be repeated or by something negative, which makes the action less likely to be repeated. This concept constitutes one of the basic laws of learning; that behavior is less likely or more likely depending on the consequences that follow it. Skinner argued that when it comes to behavior, we must focus our attention on the external consequences of an action. In other words, in order to explain behavior, we must first look outside the individual, not inside.

In operant conditioning, pleasant consequences are **rewards**, and unpleasant ones are called punishments (see Chapter 3). But for some people, a punishment might actually be considered a reward, and the converse is also true. For example, for a child who is craving attention, spanking may be welcomed—a means of gaining his parents' attention. On the other hand, withholding dessert from a child who does not eat all of his or her food may not constitute a punishment for the child, because the child might not care for the dessert in the first place. According to Skinner, any consequence that follows a behavior and increases the likelihood of the behavior being repeated is referred to as a **reinforcement**. Operant responses are typically



Skinner's contribution to early childhood stems from his work in operant conditioning.

Figure 4.4 Maslow's Hierarchy of Needs



nonreflexive, compared with classical conditioning responses, which are usually reflexive in nature. Operant responses include complex behaviors like riding a skateboard or scooter, writing a letter, or throwing a tantrum.

We witness operant conditioning played out in the grocery store all of the time. A child puts a favorite food in the shopping cart and throws a fit when the mother doesn't buy the item. To avoid further embarrassment, the mother eventually gives in and purchases the item, which causes the child to end his or her tantrum. When the child and mother visit the grocery store again, the same scenario is repeated. The child has obviously learned that crying and throwing a tantrum is instrumental in obtaining the favorite food. (Operant conditioning has also been called **instrumental conditioning**.)

Skinner's contributions to the field of early childhood education stem from his work in operant conditioning. As illustrated in his book *Walden Two*, Skinner (1948/2005) described the idea of using consistent, positive reinforcement to shape the behavior of individuals within society. The book is a well-written treatise on humans living in a carefully controlled society (utopia) and how to establish desirable behavior among them (Weber, 1984). His theories on reinforcing desired behaviors guided parents and teachers, alike, to influence and shape school-age children's behavior by using appropriate environmental reinforcements. The ideas set forth in Skinner's book represent an alternative method for shaping human behavior instead of resorting to the use or threat of punishment. Skinner's landmark research on the effects of reinforcement helped to shift society's focus from restricting undesirable behaviors (punishment) to emphasis on supporting desirable behaviors.

Summary

The variety of major developmental theories discussed in this chapter help to crystallize the early childhood educator's understanding of the role of children's early learning experiences in shaping their growth and development. The theories discussed in this chapter provide a comprehensive view of human development at the very beginning of the life span. It is important for teachers of very young children to have an evolved understanding of the development of children and what the various theorists have to say about learning and the interplay between nature and nurture in the lives of children. An in-depth understanding of children's development translates into effective practices and engagement of young children. Learning theories unlock the secret of how children begin to discover both what they can do and who they can become—in other words, how children begin to develop both their range of abilities and their unique identity as individuals (Bronfenbrenner, 1971).

Key Terms

Accommodation 90	Cognitive equilibrium 90	DNA 82
Adaptation 90	Collaborative learning 100	Ecology of human behavior 101
Apprenticeship learning 100	Concrete operational period 95	Egocentric 94
Assimilation 90	Conservation 94	Epigenesis 87
Autonomy versus shame and doubt 103	Critical thinking 85	Exosystem 103
Bioecological systems theory 101	Deferred imitation 92	Formal operations 95
Chronosystem 103	Development 82	Genes 82
Classical conditioning 107	Developmentalist 84	Goal-directed behavior 92
Classification 95	Disequilibrium 90	

Guided participation 100	Metacognition 84	Reinforcement 107
Hierarchy of human needs 104	Microsystem 102	Representational thought 94
Industry versus inferiority 104	Need for achievement and prestige 106	Reward 107
Information processing theory 97	Need for belonging and love 106	Schemes 88
Initiative versus guilt 104	Need for security and safety 105	Semi-clinical interview 88
Instrumental conditioning 108	Need for self-actualization 106	Sensorimotor 92
Interpsychological 98	Needs addressing human survival 104	Sigmund Freud 103
Intersubjectivity 100	Object permanence 93	Social constructivism 98
Intrapsychological 98	Organization 90	Social or conventional knowledge 90
Intrinsically motivated scholarship 106	Pedagogical techniques 95	Sociocultural theory 98
Irreversibility 94	Perception 98	Stage theorist 88
Kurt Lewin 84	Physical knowledge 89	Static reasoning 94
Learning 84	Portfolio 109	Theory 84
Logico-mathematical knowledge 90	Preoperational intelligence 93	Theory theorist 85
Macrosystem 103	Psychosexual development 103	Trust versus mistrust 103
Make-believe play 92	Qualitative difference 87	Tutorial intervention 100
Mental structures 88	Quantitative difference 87	Working model 85
Mesosystem 102	Radical behaviorism 106	

Reflection, Application, and Analysis Questions — — — — —

1. Select two of the developmental theories described in this chapter and discuss the similarities and differences that exist between the two theories.
2. Summarize Piaget's theory of cognitive development and provide examples of *adult* intellectual functioning that are characteristic of each of the four stages of development. Refer to the examples provided in the text for guidance.
3. Visit an early childhood classroom and observe the interactions among the children and between the children and their teachers. Provide a detailed analysis of the scaffolding behaviors that occur.
4. Select one or more of the theories discussed in this chapter and conduct a thorough investigation of two preschool children's portfolios (a compilation of the child's work samples, products, and observational notes). Describe each child's developmental progress in light of the concepts presented in the theory or theories you select.

Extension Activities — — — — —

1. Take a few moments to reflect about a specific time when you were engaged in apprenticeship learning. What was that experience like for you? Write down your reflective thoughts about the experience.
2. Observe a preschooler and a significant caregiver engaged in a teaching-learning activity, perhaps similar to the one described in the chapter opening vignette. In a journal, detail the series of exchanges, both verbal and behavioral, between the child and the more expert other.

Additional Readings — — — — —

The recommended readings below will provide students with a comprehensive and deeper understanding of the essentials of human development and learning theory.

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|--|---|
| <p>Berk, L. E., & Winsler, A. (1995). <i>Scaffolding children's learning: Vygotsky and early childhood education</i>. Washington, DC: National Association for the Education of Young Children.</p> | <p>A scholarly and highly palatable read, this text has been found to be quite suitable for early childhood educators, teachers, and students. Vygotsky's theories, which focus on social, cultural, and societal development, as well as</p> |
|--|---|

practical ideas for transferring theory into practice, are fully explicated in this text. Also included are key discussions on concepts such as play, language, assessment, development, special needs, and other topics.

Bjorklund, D. F. (2005). *Children's thinking: Cognitive development and individual differences*. Belmont, CA: Wadsworth.

This book discusses typical patterns of change in thinking observed over time and individual differences in children's thinking in infancy and childhood, and provides a plethora of research evidence relative to children's cognitive development.

Bodrova, E., & Leong, D. (2007). *Tools of the mind: The Vygotskian approach to early childhood education* (2nd ed.). Upper Saddle River, NJ: Merrill/Prentice Hall.

This book provides a comprehensive overview of Vygotsky's theory and alternative theories, as well as concrete instructional techniques to foster children's growth and development.

DeVries, R. (2001). *Developing constructivist early curriculum: Practical principles and activities*. New York: Teachers College Press.

This book offers a constructivist overview of developmentally appropriate curriculum in early childhood education and practical ideas for classroom activities.

Puckett, M. B., Black, J., Wittmer, D. S., & Petersen, S. H. (2009). *Young children: The development from pre-birth to age 8*. Upper Saddle River, NJ: Merrill.

A very easy read, this book is an excellent blend of academic research and practical information.

On the Web —————

Jean Piaget Society - www.piaget.org/links.html

This website contains a collection of essays for the purposes of teacher training.

Resources for the Constructivist Educator - <http://www.constructivistassociation.org/>

This website from the Association for Constructivist Teaching provides a rich, problem-solving arena that encourages the learner's investigation, invention, and inference.

Student Study Site —————

Visit www.sagepub.com/gordonbiddle to access several study tools including eFlashcards, web quizzes, links to SAGE journal articles, web resources, video resources, lesson plan templates, and more.