

# MODELS OF HUMAN DEVELOPMENT

## K E Y T E R M S

Phase-stage theory  
Developmental task  
Developmental milestone  
Ecological theory  
Dynamic systems theory  
Affordances  
Rate limiters  
Constraints  
Degrees of freedom problem  
Behavior setting theory  
Information processing theory  
Perception  
Perceptual-motor  
Adaptation  
Accommodation  
Assimilation  
Schema

## C H A P T E R C O M P E T E N C I E S

Upon completion of this chapter you should be able to:

- Compare and contrast maturational, environmental, interactionist, and transactional views of causation in motor development
- Demonstrate familiarity with a variety of theoretical models of human development
- Discuss changes in cognition as a developing process
- Classify theories of development into various conceptual viewpoints
- Analyze changes in psychosocial development across the life span
- Identify the major developmental tasks across the life span



## KEY CONCEPT

Human development may be studied from a variety of theoretical frameworks, each of which has implications for the motor development and movement education of infants, children, adolescents, and adults.

During the past century, several developmental theorists have closely studied the phenomenon of human development. Sigmund Freud (1856–1939), Erik Erikson (1902–1994), Arnold Gesell (1880–1947), Robert Havighurst (1900–1991), and Jean Piaget (1896–1980), among others, have made valuable contributions to our knowledge of human development. Each has constructed theoretical models that depict the developmental process and form a basis for much of today's work.

This chapter takes a brief look at the models of development proposed by these theorists. As a basis for a more detailed study of motor development, we also examine characteristic ways in which theorists view the phenomenon of human development with particular attention given to ecological theories. We finish the chapter by examining three historically popular theories of development that have stood the test of time. Cagen and Getchell (2004) contend that “for motor development teachers, the study of theories is critical to the understanding of developmental change” (p. 25).

## THEORETICAL MODELS OF HUMAN DEVELOPMENT

Austrian psychiatrist Sigmund Freud's (1927) *psychoanalytic theory* of human behavior may be viewed, in part, as one of the first models of human development, even though his work centered around personality and abnormal functioning. Freud's famous psychosexual stages of development reflected various zones of the body with which the individual seeks gratification of the *id* (the unconscious source of motives, desires, passions, and

pleasure seeking) at certain general age periods. The *ego* mediates between the pleasure-seeking behavior of the *id* and the *superego* (common sense, reason, and conscience). Freud's *oral*, *anal*, *phallic*, *latency*, and *genital* stages of personality development represent the terms applied to the pleasure-seeking zones of the body that come into play at different age periods. Each stage relies heavily on physical sensations and motor activity.

Freud's psychoanalytic theory has received its share of criticism primarily due to the inability to scientifically objectify, quantify, and validate its concepts. It has, however, stimulated considerable research and study and served as the basis for the notable works of his German-born student Erik Erikson (1963).

Erik Erikson (1963, 1980) focused on the influence of society, rather than sex, on development. His *psychosocial theory* describes eight stages of the human life cycle and puts them on a continuum, emphasizing factors in the environment, not heredity, as facilitators of change. Erikson's view of human development acknowledges factors within the individual's experiential background as having a primary role in development. His view of the importance of motor development is more implicit than explicit, but he clearly points out the importance of success-oriented movement experiences as a means of reconciling the developmental crises that each individual passes through.



## CONCEPT 2.1

There are numerous models of human development, each of which reflects its originator's knowledge, interests, and biases.

Arnold Gesell's (1928, 1954) *maturational theory* of growth and development emphasizes maturation of the nervous system as the principal driver of the physical and motor aspects of human behavior. Gesell documented and described general age periods for the acquisition of a wide variety of rudimentary movement abilities during infancy and

viewed these maturation-based tasks as important indicators of social and emotional growth. Gesell also described various ages when children are in “nodal” periods or when they are “out of focus” with their environment. A nodal stage is a maturational period during which the child exhibits a high degree of mastery over situations in the immediate environment, is balanced in behavior, and is generally pleasant. Being out of focus is the opposite; the child exhibits a low degree of mastery over situations in the immediate environment, is unbalanced or troubled in behavior, and is generally unpleasant. Maturation theory is not widely accepted today, but it played a significant role in the evolution of child development as an area of study.

A fourth developmental model, that of Robert Havighurst (1972), views development as an interplay between biological, social, and cultural forces through which individuals are continually enhancing their abilities to function effectively in society. Havighurst’s *environmental theory* views development as a series of tasks that must be achieved within a certain time frame to ensure the proper developmental progression of the individual. According to Havighurst’s model, there are teachable moments when the body is ready and when society requires successful completion of a task. As with the other models discussed, the tasks described by Havighurst rely heavily on movement, play, and physical activity for their development, particularly during infancy and childhood.



## CONCEPT 2.2

No one theory is complete or totally accurate in describing or explaining human development, and, as a result, all break down at some point.

A fifth developmental theory still popular among educators is that of Swiss psychologist Jean Piaget (1969). Piaget’s *cognitive development theory* places primary emphasis on the acquisition of cognitive thought processes. He gained insight into the development of cognitive structures through careful observation of infants and children. The genius

in Piaget’s work lies in his uncanny ability to pick out subtle clues in children’s behavior that give us indications of their cognitive functioning. Piaget viewed these subtle indicators as milestones in the hierarchy of cognitive development. The primary flaw in Piaget’s work is that he grossly underestimated the rate of acquisition of several cognitive structures, although their sequence of acquisition is largely accepted as valid by developmentalists. Movement is emphasized as a primary agent in the acquisition of increased cognitive structures, particularly during infancy and the preschool years. Piaget used chronological age only as a broad and general indicator of cognitive functioning and relied instead on observed behaviors. These observed behaviors served for Piaget as the primary indicators of the child’s ever-increasing complexity in cognitive development. Piaget identified these developmental phases as *sensorimotor* (birth to 2 years), *preoperational* (2 to 7 years), *concrete operations* (7 to 11 years), and *formal operations* (12 years and over). Piaget did not directly concern himself with development beyond about age 15 because he believed that highly sophisticated intellectual capabilities were developed by this time.

All theorists look at human development from somewhat different points of view, but close inspection reveals remarkable similarities. Each theorist emphasizes movement and play as important facilitators of enhanced functioning. Also, each tends to be more descriptive than explanatory. In other words, they tell us “what” is happening in the typical process of development, rather than “why” it is happening.

## CONCEPTUAL VIEWPOINTS OF DEVELOPMENT

Close inspection of the five models of development outlined, as well as the study of others, reveals a distinct tendency for each model to group around one of four conceptual frameworks. These frameworks are classified here as (1) phase-stage, (2) developmental task, (3) developmental milestone, (4) ecological, and (5) information processing theories (Table 2.1). We will take a brief look at

**TABLE 2.1** Conceptual Approaches to the Study of Human Development

Conceptual Approach	Representative Theorists	Research Focus
Phase-Stage Theory	Sigmund Freud	Study of psychosexual development from birth through childhood
	Erik Erikson	Study of life span psychosocial development
	Arnold Gesell	Study of maturational processes in central nervous system development from birth through childhood (“ontogeny recapitulates phylogeny”)
Developmental Task Theory	Robert Havighurst	Study of the interaction of biology and society on developmental maturity from infancy through old age
Developmental Milestone Theory	Jean Piaget	Study of cognitive development as an interactive process between biology and the environment from infancy through childhood
Ecological Theory (Dynamical Systems branch)	Nicholas Bernstein; Kugler, Kelso, and Turvey	Study of development as a discontinuous, self-organizing, transactional process among the task, individual, and environment throughout life
Ecological Theory (Behavior Setting branch)	Roger Barker; Urie Bronfenbrenner	Study of development as a function of the individual’s interpretation of specific environmental settings transacting with the sociocultural and historical milieu
Information Processing Theory	Schmidt & Lee; Kephart	Study of development as a perceptual-motor process and the events occurring internally between sensory input and motor output

each, with particular attention given to the newer ecological theories.



### CONCEPT 2.3

Theories of development may be studied from several distinct conceptual viewpoints.

## Phase-Stage Theory

The **phase-stage** approach to developmental theory is the oldest of the conceptual viewpoints. All classical developmental theorists (i.e., stage

theorists), whether they are studying cognitive, moral, personality, or motor development, contend that there are universal age periods characterized by certain types of behavior. These behaviors occur in phases or stages, last for arbitrary lengths of time, and are invariant. In other words, stages are sequential and cannot be reordered, but one or more stages may be skipped. Furthermore, stage theory focuses on broad-based changes rather than narrow or isolated behaviors.

Each phase (i.e., typical behavior) generally covers a period of one year or more and may be accompanied by one or more other stages. Some theorists subdivide particular phases into smaller stages. Others prefer to look at one phase typifying

one particular period. Most theorists who propose a phase-stage scheme have divided childhood, or even the entire life cycle, into ten periods or less. The phase-stage concept is probably the most popular among parents and educators and is often reflected in our thinking and speech when we say, “She is just going through a stage” or “I will be happy when he is out of that phase.” Freud, Erikson, and Gesell each viewed child development as a phase-stage–related process.

Stages have been proposed for several fundamental movement tasks. The viability of a rigid stage theory of motor development is questionable. More flexible stage models based on the components of a movement rather than on the total body configuration hold greater promise. Any phase-stage theory describes only general (i.e., group or normative) developmental characteristics for a generic (average) individual postulated to be common to all people. Phase-stage theory gives us a view of the “big picture” but does not accommodate the details.

### Developmental Task Theory

A second conceptual viewpoint of development is the **developmental task** approach. A developmental task is an important accomplishment that individuals must achieve by a certain time if they are to function effectively and meet the demands placed on them by society. Proponents of developmental task theory view the accomplishment of particular tasks within a certain time span as prerequisite to smooth progression to higher levels of functioning. This concept of development differs from the phase-stage view in that it is predictive of later success or failure based on the individual’s performance at an earlier stage and does not merely attempt to describe typical behavior at a particular age. Havighurst’s view of development uses the developmental task concept to both describe and predict behavior from infancy through adolescence (Havighurst & Levine, 1979). The hemispherical dominance theory and treatment techniques for individuals with learning disorders as proposed

by Delacato (1966) also follow a developmental task approach. Although developmental task theories claim predictability, little has been done to test their assertions. Hence, there is considerable question as to their validity.

### Developmental Milestone Theory

The **developmental milestone** approach is a third conceptual framework from which development is viewed. Developmental milestones are similar to developmental tasks except for their emphasis. Instead of referring to accomplishments that take place if the individual is to adapt to the environment, this approach refers to strategic indicators of how far development has progressed. The accomplishment of a developmental milestone may or may not in itself be crucial to adjustment in the world as it is with a developmental task. Milestones are merely convenient guidelines by which the rate and extent of development can be gauged. As with phase-stage theories, the developmental milestone theories are more descriptive than predictive, but unlike stage theories, they view development as a continual unfolding and intertwining of developmental processes, not as a neat transition from one stage to another. Piaget’s cognitive development theory is generally considered to be a developmental milestone theory, as is the dynamical systems theory of motor development.

Recognition that most models of human development tend to fall under one of these three concepts enables us to view the phenomena of growth and development more objectively. Each concept has merit and operates to a certain degree throughout the developmental process. The years of infancy and early childhood do require the achievement of certain important tasks such as learning to walk, talk, and take solid foods by a specific age for normal functioning to be established. These years also encompass a variety of stages that children pass through at more or less the same age, in addition to a variety of milestones achieved as subtle indicators of how far development has progressed.



## Ecological Theory

It is important to know about the products of development in terms of *what* people are typically like during particular phases and stages, developmental milestones, and developmental tasks (description). It is equally important, however, to know *why* these changes occur (explanation). To this end many developmentalists are looking at explanatory models in an attempt to understand more about the underlying processes that actually influence and control development.

Ecological theory attempts to be of practical benefit by being both descriptive and explanatory. **Ecological theory**, or “contextual theory” as it is sometimes called, views development occurring as a function of the environmental “context” and historical time frame in which one lives. The study of human ecology from a developmental perspective is a matter of studying the relationship of individuals to their environment and to one another. Two ecological approaches popular among motor developmentalists are dynamic systems theory and behavior setting theory.

### *Dynamic Systems Branch*

**Dynamic systems theory** is popular among many developmentalists (Alexander et al., 1993; Caldwell & Clark, 1990; Kamm et al., 1990; Thelen, 1989; Thomas, 2000; Getchell & Whittall, 2004; Haywood & Getchell, 2009). It is based largely on the work of the Russian physiologist Nicholas Bernstein (1967) and has been expanded by Kugler, Kelso, and Turvey (1982). The word *dynamic* conveys the concept that developmental change is nonlinear and discontinuous. Because development is viewed as nonlinear, it is seen as a discontinuous process. That is, individual change over time is not necessarily smooth and hierarchical and does not necessarily involve moving toward ever higher levels of complexity and competence in the motor system. Individuals, particularly those with disabling impairments, may be impeded in their motor development. For example, children with spastic cerebral palsy are frequently delayed in learning to walk independently. When independent walking is achieved, their gait

patterns will be individualized and achieved when appropriate for each child. Although, by definition, development is a continuous process, it is also a discontinuous process when viewed from a dynamical perspective. In other words, development is a “continuous-discontinuous” process.

The dynamics of change occur over time but in a highly individual manner influenced by a variety of critical factors within the system. These factors are termed **affordances** and **rate limiters**. *Affordances* tend to promote or encourage developmental change. *Rate limiters* are conditions that serve to impede or retard development. Affordances and rate limiters are viewed as **constraints**. Constraints either encourage or discourage movements (Newell, 1984). For children with cerebral palsy, for example, these constraints are neurological and biomechanical. Affordances may include assisted support, handholds, encouragement, and guided instruction.

The word *systems* conveys the concept that the human organism is self-organizing and composed of several subsystems. It is *self-organizing* in that humans, by nature, are inclined to strive for motor control and movement competence. Self-organization occurs when specific conditions within the biology of the individual and the environment are met that allow for a new and stable pattern of behavior to emerge. For example, as your walking speed is increased on the treadmill, you self-organize into a running pattern of movement. Conversely, when the treadmill slows down, you self-organize back to a walking pattern. Systems derived from the requirements of the movement task, the biology of the individual, and the environment operate separately and in concert to determine the rate, sequence, and extent of development. Coordination and control of movement is the result of several systems working dynamically together in a cooperative manner. No one factor is seen as more or less important than the others. All systems interact in a manner that causes motor behavior to emerge independent of any one system (Alexander et al., 1993). Children with cerebral palsy, as self-organizing systems, frequently develop individually unique gait patterns in response to their capabilities for meeting the achievement demands of the

walking task. Preferred patterns of movement behavior develop in response to unique factors within the individual, the task, and the environment. These movement patterns are the result of the most efficient interaction of systems and the least amount of energy required. Although preferred patterns of movement behavior do exist, they are altered when the demands of the system dictate change.

Viewed from a systems perspective, numerous elements change over time as one grows and develops. The complexity of determining how movement skills are learned is referred to as the **degrees of freedom problem** (Bernstein, 1967). The performance of a movement task includes neuromotor as well as biomechanical degrees of freedom. The number of degrees of freedom are, however, constrained through the individual gaining motor control and movement coordination of the movement task, thereby resulting in the formation of movement patterns. The individual develops preferred patterns of movement, but these preferred patterns may be reorganized through control parameters. *Control parameters* are “those variables that provide a condition for a pattern change. Control parameters do not dictate what change will occur, but when they reach a critical value, they act as an agent for reorganization of the motor pattern” (Alexander et al., 1993, p. 3).

Transition from one pattern of movement to another is called a *phase shift*. Phase shifts are plentiful among infants when moving from one form of locomotion (crawling to creeping) to another (creeping to walking). During this time the infant is in a state of instability, shifting from one pattern to the other until a new preferred pattern is firmly established.

Dynamic systems theory attempts to answer the “why” or process questions that result in the observable product of motor development. Much of the work to date has centered on infant motor development, but an increasing amount of research is focusing on dynamical explanations of motor development among children, adolescents, and adults in populations of both typically and atypically developing individuals.

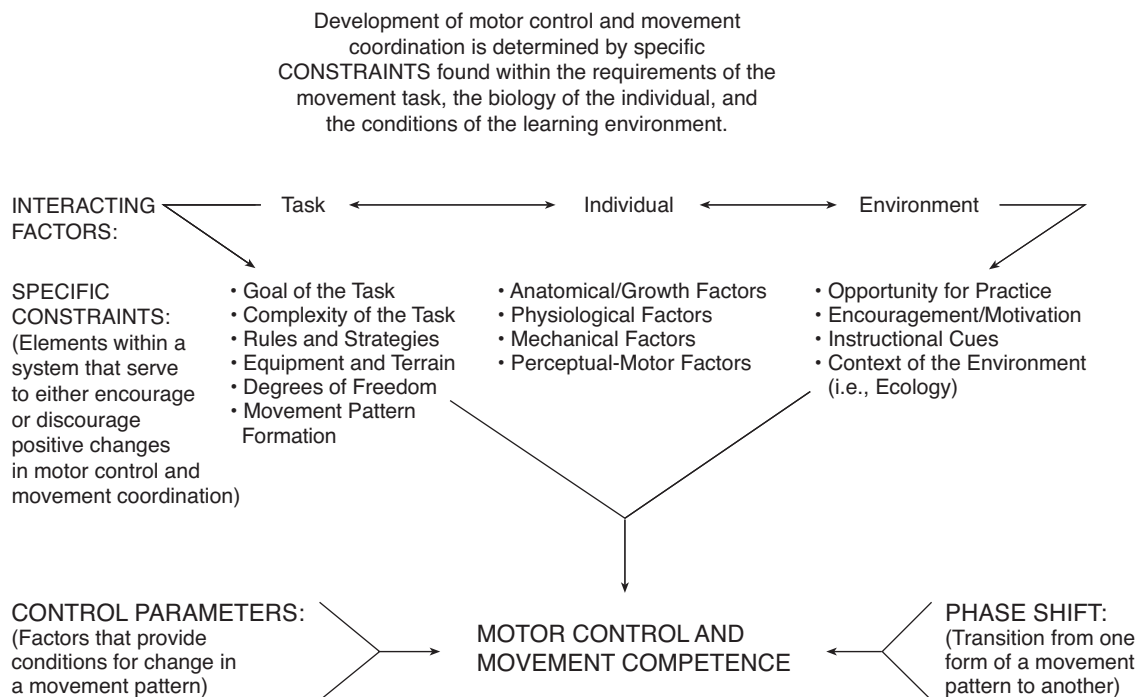
For years developmentalists have recognized the interactive role of two primary systems in the

developmental process: heredity and environment. Many now, however, have taken this view one step further in recognizing that the specific demands of the movement task transact with the individual (i.e., hereditary or biological factors) and the environment (i.e., experience or learning factors) in the development of stability, locomotor, and manipulative movement skills. Such a transactional model implies that *constraints* within the task, the individual, and the environment not only interact but also have the potential for modifying and being modified by the other as one strives to gain motor control and movement competence (Figure 2.1).

Both the processes and the products of motor development should remind us of the individuality of the learner. Each individual has his or her unique timetable for the development of abilities. Although our “biological clock” is rather specific when it comes to the sequence of movement skill acquisition, the rate and extent of development are individually determined and dramatically influenced by the specific performance demands of the individual task.

For example, when performing a basketball free throw, consider all of the literally thousands of possibilities for every combination of joint actions, motor neuron responses, and muscle contractions potentially involved in performing this movement task. The complexity of the process of movement itself is truly awesome to contemplate. Moreover, these motor processes are combined with the perceptual aspects involved in the task. While attempting to make a free throw, you must execute not only the motor aspects of the task but also the perceptual aspects of judging distance, depth, and trajectory prior to taking your shot at the basket. All of these possibilities for movement must be constrained into an organized pattern that results in either making the basket (successfully negotiating the degrees of freedom problem) or missing. The degrees of freedom problem, therefore, is the scientist trying to understand and make meaning of how we control all of the potentially available degrees of freedom to provide a desired movement (Coker, 2004).

Typical age periods of development are just that: typical, and nothing more. Age periods

**Figure 2.1**

Development from a constraints perspective.

merely represent approximate time ranges during which certain behaviors may be observed for the mythical “average” individual. Overreliance on these time periods would negate the concepts of continuity, specificity, and individuality in the developmental process and are of little practical value when working with individuals from a developmental perspective.

### **Behavior Setting Branch**

**Behavior setting theory** is a branch of ecological psychology that has its roots in the work of Kurt Lewin in the 1930s to 1940s and his colleague Roger Barker in the 1950s to 1970s (Thomas, 2000). Lewin is credited with developing a branch of Gestalt psychology known as *topological psychology*, a term taken from mathematics where “topology” is the study of geometric properties that remain unchanged even when under distortion. Lewin used the term *life space* to account for all that influences a child’s behavior at a given time.

Barker (1978) extended Lewin’s thinking with the notion that the *behavior setting*, that is, the specific environmental conditions of the child’s life space, accounts for a large portion of the individual variation among children. His concept of *standing patterns of behavior* (i.e., typical ways in which people act) explains why different settings evoke different responses. For example, we can predict that if a typical second grader is outside for recess, her behavior will be active, energetic, and noisy. When in the classroom, however, her predicted standing pattern of behavior will be the opposite. If a teenager is hanging out at the mall, his predicted behavior is considerably different from that expected in the marching band.

Furthermore, the milieu in which these events occur, according to Barker, encompasses the expected actions of people in a specific behavior setting. To that extent Barker felt that the “physical setting” and the “time boundaries” of a behavior setting are instrumental in shaping the expected behavior. Take, for example, our abrupt change in behavior



when sitting in a theater several minutes before a play begins, and when the lights dim and the first act begins. The physical setting of the brightly lit theater encourages talking and looking about the auditorium. On the other hand, when the lights dim and the actors come on stage, talk abruptly ceases and the audience settles into their seats to watch the play. If the play is relatively short, the time boundaries are acceptable to most and full attention is given to the actors on stage. But if the play is long and continues on and on, the standing patterns of behavior begin to change as a function of the time boundaries of the play. People begin to fidget, whisper, and otherwise divert their attention to something other than the play. Wise playwrights, therefore, divide their plays into two or three acts, thus allowing for a brief intermission between acts, which will restore the pattern of behavior expected from the audience.

The work of Urie Bronfenbrenner is an extension of Barker's. It places strong emphasis on factors within the environment as being key to development. Bronfenbrenner (1979) defined the ecology of human development as:

the scientific study of the progressive, mutual accommodation between an active, growing human being and the changing properties of the immediate settings in which the developing person lives, as this process is affected by relations between those settings, and by the larger contexts in which the settings are embedded. (p. 21)

Bronfenbrenner's bioecological theory, however, is based on the premise that it is not the behavior setting that predicts behavior, but the individual's interpretation of the setting in both time and space.

## INTERNATIONAL PERSPECTIVES

### Theorists All

Over the years I have had the honor of hosting a wide assortment of visiting scholars who have come to study at Indiana University. They have come from every continent and have brought with them a variety of educational backgrounds and deep interests in motor development, especially among children and youth.

These scholars, both emerging and well established, also bring fresh new perspectives on a variety of child-centered developmental topics. They do so through their own personal social, cultural, economic, and political reality, a reality that in many cases is vastly different from that of an aging professor living on a horse farm in Midwest USA. As a result, no matter if the visiting scholar was from Australia, Brazil, Chile, China, Egypt, Japan, Mexico, or Turkey, we engaged in hour upon hour of spirited conversation and debate in a genuine attempt to better understand the context under which they engaged children and youth in helping them develop to their potential in body, mind, and spirit.

Although we each shared the same passion for trying to better understand the products and processes of motor development, our views were often radically different. Why? Simply because of the often wide differences in our realities. Each brought many respected theorists in support of their views, who, although sometimes little known in my reality, were respected in theirs.

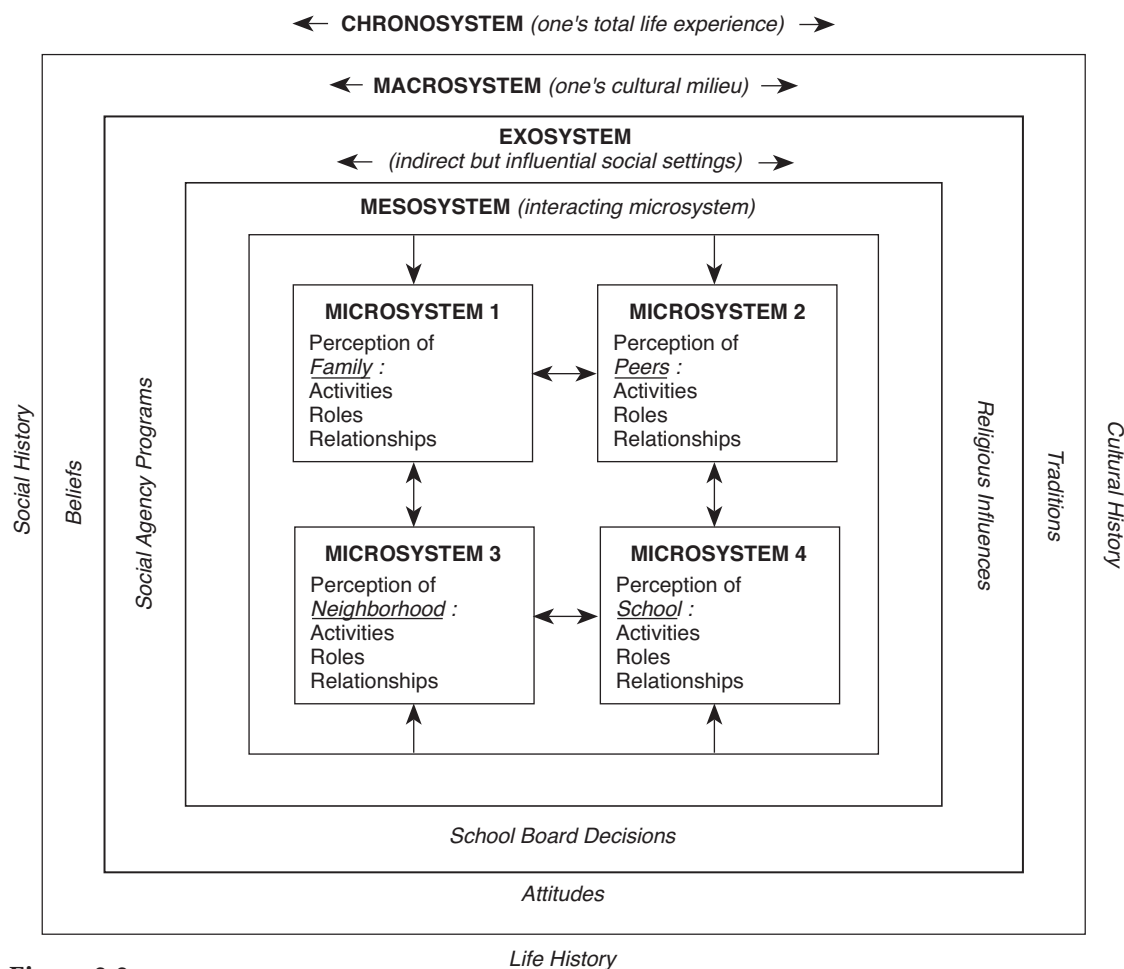
Theory and reality don't often collide, but they should. They don't collide because it is a rather comfortable task to select a point of view (theory) that supports your reality. In doing so, however, we run the very real risk of not recognizing or appreciating the reality of another. Although we are much the same in our life journey, we are also much different. The reality of our daily life experience shapes who we are and what we will become. As a result no one theory, or even collection of theories, adequately describes and explains who we are.

Be aware of and attuned to the reality of others. It will shape what you believe and how you choose to make a difference.

That is, the *meaning* attached to the environment, not the environment, guides behavior. Bronfenbrenner argues that it is nonsense to try to understand behavior from the objective reality of the environment without also learning what the environment means to the individual. As a result, he places considerable importance on one's perceptions of the activities, roles, and interpersonal relations typically displayed in a behavior setting. *Activities* are what people are doing. *Roles* are the expected behaviors in that setting for a given position in society—parent, teacher, adolescent, coach, and so forth. *Interpersonal relations* are the ways in which people treat each other

by what they say and what they do, in that setting (Bronfenbrenner, 2005).

Development occurs within a broad range of environmental contexts. Bronfenbrenner terms these settings the *microsystem* (one's family, school, neighborhood, and peers), the *mesosystem* (the interaction among various settings within the microsystems), the *exosystem* (social settings in which the individual does not play an active role but is affected by its decisions), the *macrosystem* (the culture in which one exists), and the *chronosystem* (the sociohistorical events of one's lifetime). Figure 2.2 illustrates the microsystems of the family, school,



**Figure 2.2**

A conceptualization of Bronfenbrenner's ecological theory of development as influenced by one's perceptions of his or her behavior settings.

neighborhood, and peer group influencing an individual based on his or her perceived notion of appropriate activities, roles, and interpersonal relations within the context of each. In our example, the mesosystem is composed of the interaction patterns among these four microsystems. The exosystems in our hypothetical example are settings that do not directly involve the individual but affect, or are affected by, what happens in a behavior setting. The macrosystem is the cultural milieu in which the individual exists and is composed of such things as beliefs, traditions, attitudes, and practices shared throughout one's immediate culture. Finally, the chronosystem involves the pattern of events over one's life span.

## INFORMATION PROCESSING

**Information processing** perspectives on motor skill learning first appeared in the 1960s and are associated with the process by which one attaches meaning to information, namely perception. Our sensory modalities (i.e., visual, auditory, gustatory, tactile, and kinesthetic) provide for input into the brain, which from an information processing perspective is sometimes characterized as a "computer" (Haywood & Getchell, 2009) or "black box" (Schmidt & Lee, 2005). This computer or black box heuristic begins with input into the process and ends with output from the process. What happens between input-output is critical to understanding this perspective that has been so dominant in studying the motor learning and control of human motor behavior.

Kephart (1960, p. 63) contends that: "The input-output system is a closed system, and we cannot stop activities in one area while we investigate the effect of changes in the other. Therefore, we can not speak of, or think of, input and output as two separate entities; we must think of the hyphenated term *input-output*. In like manner, we cannot think of perceptual activities and motor activities as two different activities; we must think of the hyphenated term *perceptual-motor*." Furthermore, Kephart goes on to say that: "The total perceptual-motor process should be considered in every learning activity which we set up for the

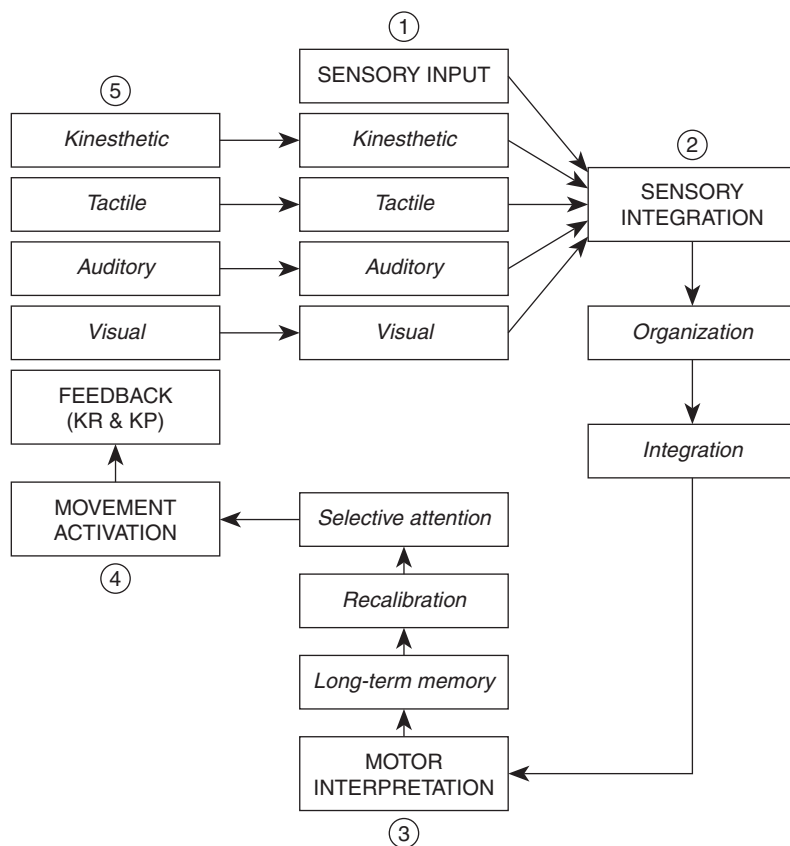
child" (p. 63): And from our perspective, for adolescents and adults as well.

The word **perception**, which means to know or to interpret information, is the process of organizing and synthesizing information that we gather through the various sense organs with stored information or past data, which leads to a modified response pattern. When we consider the term **perceptual-motor**, then, we know that the first part of the term signifies the dependency of voluntary movement activity on some form of sensory information. All voluntary movement involves an element of perceptual awareness resulting from sensory stimulation. The second part of the term *perceptual-motor* indicates that the development of one's perceptual skills are influenced, in part, by movement. Perceptual skills are learned and, as such, use movement as an important medium for this learning to occur. The reciprocal relationship between sensory input and motor output enables both perceptual and motor skills to develop in harmony.

It has long been recognized that the quality of one's movement performance depends on the accuracy of perception and the ability to interpret these perceptions into a series of coordinated movement acts. The terms *eye-hand coordination* and *eye-foot coordination* have been used for years to express the dependency of efficient movement on the accuracy of one's sensory information. The individual in the process of shooting a basketball free throw has numerous forms of sensory input that must be sorted out and expressed in the final act of shooting the ball. If the perceptions are accurate and if they are expressed in a coordinated sequence, the basket is made. If not, the shot misses. All voluntary movement involves the use of one or more sensory modalities to a greater or lesser degree, depending on the movement act to be performed.

As multisensory learners, we constantly use our senses to learn about the spatial and temporal aspects of our environment. Therefore, information-processing theories include the following steps:

1. *Sensory input*: Receiving various forms of stimulation by way of specialized sensory receptors (visual, auditory, tactile, and



**Figure 2.3**

An information processing perspective of the perceptual-motor process.

kinesthetic) and transmitting this stimulation to the brain in the form of neural energy.

2. *Sensory integration*: Organizing incoming sensory stimuli and integrating it with past or stored information (memory).
3. *Motor interpretation*: Making internal motor decisions (recalibration) based on the combinations of sensory (present) and long-term memory (past) information.
4. *Movement activation*: Executing the actual movement (observable act) itself.
5. *Feedback*: Evaluating the movement act using various sensory modalities that feed back information into the sensory input aspect of the process, thus beginning the cycle again

(KR = knowledge of results; and KP = knowledge of performance).

Figure 2.3 illustrates an information processing perspective of the perceptual-motor process. Take a few minutes to review this figure to fully appreciate the importance of perception in the process of movement.

### THREE LEADING THEORIES OF HUMAN DEVELOPMENT

In this section, summaries of three theories, each representing a different conceptual point of view, are presented. The phase-stage theory of Erik Erikson,

the developmental milestone theory of Jean Piaget, and the developmental task theory of Robert Havighurst have been selected because of their thoroughness, popularity, and important implications for motor development. Ecological theories were discussed in the preceding paragraphs.

## Erik Erikson

The psychosocial theory of Erik Erikson (1963, 1980) adheres to the phase-stage approach to studying human development. It is an experience-based theory widely acclaimed by educators and psychologists. The following overview of Erikson's stage theory is presented for clarity and ease of understanding. See Table 2.2 for an outline of Erikson's stages and the approximate age periods when they appear. Note the numerous implications for movement throughout the theory.



### CONCEPT 2.4

Individuals' psychosocial development is influenced by their motor development and movement education throughout the life span.

#### A. Acquiring a Sense of Basic Trust Versus Mistrust (Infancy)

According to Erikson, bodily experiences provide the basis for a psychological state of *trust versus mistrust*. The infant learns to trust "mother," oneself, and the environment through mother's perception of the infant's needs and demands. Mutual trust and a willingness to face situations together are established between mother and child. For the

## DEVELOPMENTAL DILEMMA

### Al: A Story of Success

Several years ago the senior author and his wife faced a very personal developmental dilemma. Our 17-year-old nephew, Alan, was in serious trouble with the law. Since the untimely death of his father when Alan was only 22 months of age his life had gone steadily downhill. A grieving mother, an inconsistent home life, and unreliable father figures coupled with rejection, difficulty making friends, school failure, truancy, uncontrolled rage, and total disregard for authority finally culminated in several encounters with the police, the result being that the judge was prepared to send him to a prison for juveniles. Upon learning of this, we hastily convened a family meeting and discussed the possibility of bringing Alan from the East out to Indiana to live with us. The court agreed to permit us to serve as his "parole officers" and if he remained out of trouble for the next three years, his record as a juvenile would be expunged.

Thus began a three-year effort in tough love but with a definite frame of reference: Erik Erikson's theory of psychosocial development. We focused

on the first six stages in Erikson's model, using them as the basis for restructuring Alan's life in the quest to help him become a responsible, law-abiding, contributing member of society.

Through a series of family-focused activities and living on a rural horse farm in southern Indiana we were able to help Al (we never referred to him as Alan, but called him Al in a complete attempt for him to adopt a new identity). He learned to *trust*. He developed a sense of *autonomy*, *initiative*, *industry*, and personal *identity*. He even, for the first time, experienced what it was like to have a girlfriend and decent male friends who contributed to his emerging sense of *intimacy*.

Was it worth the time and effort? Absolutely. Al graduated from high school as the "Most Improved Student," did a stint in the Army, and now works as a graphic artist for a well-known company that advertises nationally.

With the help of Erik Erikson we are able to tell the story of Al as a success story, rather than that of a life that went wrong from the very beginning and never recovered. Way to go, Al!



**TABLE 2.2 Erik Erikson's Stages of Psychosocial Development**

Stage	Characteristics	Approximate Age Period	Defining Event
I Trust vs. Mistrust	Trust during infancy is achieved by having basic needs met by responsive, sensitive caregivers. Mistrust is developed through uncertainty about the future and inconsistent meeting of basic needs.	Infancy	Mutual affirmation
II Autonomy vs. Doubt and Shame	Autonomy is developed as a toddler by being permitted to assert one's will and establish a rudimentary sense of independence. Doubt and shame develop out of overly harsh and inconsistent discipline and "smothering" behaviors by caregivers.	Toddler	"Terrible two's"
III Initiative vs. Guilt	Initiative is established during the early childhood years when children are challenged to engage in more purposeful and responsible socialized behaviors. Guilt feelings develop from excessive anxiety arising out of irresponsible behavior.	Preschool	Play age
IV Industry vs. Inferiority	Industry is maximized during the exuberant years of childhood when children direct their energies to mastering the new cognitive and physical skills of their rapidly expanding world. Inferiority develops from feelings of incompetence and failure to achieve expectation levels.	School Age	Learning new skills
V Identity vs. Role Confusion	Identity is achieved by adolescents finding out who they are and what they are about and exploring alternative solutions to life's problems. Role confusion is likely among those stifled in this quest.	Early Adolescence	Fidelity and devotion to friends and causes
VI Intimacy vs. Isolation	Intimacy is achieved during young adulthood by forming long-term, close, personal ties with significant others. Isolation occurs among those unable to reveal themselves in intimate relationships.	Late Adolescence	Mutually satisfying love and affiliation
VII Generativity vs. Self-Absorption	The mature adult who has achieved generativity is genuinely interested in helping others, especially the younger generation, lead productive lives. Those more concerned about their own wants and needs than those of others are self-absorbed.	Adulthood	Resolves "midlife crisis"
VIII Integrity vs. Despair	Older adults who look back over their life and positively evaluate what they have done with it are individuals with integrity. Those who lament the past and the decisions of a lifetime do so with despair.	Old Age	Wisdom, reflection, and a sense of fulfillment

neonate, trust requires a feeling of physical comfort and a minimum of fear and uncertainty. A sense of basic trust helps an individual to be receptive to new experiences willingly.

Movement is an essential ingredient of the reciprocal relationship between parent and child. The rhythmical rocking, bathing, and general play behaviors between parent and baby provide a natural means, through movement, for establishing a sense of trust. Mistrust arises out of uncertainty; insecurity; and failure to respond to baby's needs for comfort, attention, and mutual play dialogue.

#### B. Acquiring a Sense of Autonomy Versus Doubt and Shame (Toddler)

During the stage in which the toddler is establishing a sense of *autonomy versus doubt and shame*, Erikson believed that continued dependency creates a sense of doubt and shame about one's capabilities. It is therefore critical that the young child assert autonomy as a normal stage of psychosocial development. Children are bombarded by the conflicting pulls of asserting their autonomy and of denying themselves the right and capacity to make this assertion. During this period they need guidance and support as they strive for autonomy, lest they find themselves at a loss and are forced to turn against themselves with shame and doubt. At this stage of development, children are typically eager to explore and accomplish new feats. During this period it is essential that proper development of the ego occurs, thereby permitting awareness of oneself as an autonomous whole.

Active play is particularly important during this stage because it allows children to develop autonomy within their own boundaries. A child's autonomy emerges from the realization that the environment and the self can be controlled. During this stage children frequently violate the mutual trust established with others in order to establish autonomy in distinct areas.

#### C. Acquiring a Sense of Initiative Versus Guilt (Preschool)

During this stage in which the child establishes a sense of *initiative versus guilt*, avid curiosity and

enthusiasm or feelings of guilt and anxiety develop. According to Erikson, the conscience is established during this stage. Specific tasks are mastered, and children assume responsibility for themselves and their world. They realize that life has a purpose. Children discover that with their greater mobility they are not unlike the adults in their environment. They begin to incorporate into their consciences who their parents are as people, and not merely what their parents try to teach them. With improvements in their use of language, children can expand their fields of activity and imagination. Awareness of sex differences also develops at this stage.

During this period children find pleasurable accomplishment in manipulating meaningful toys. Fundamental movement skills are being mastered, influencing children's success in the game activities of their culture. Successful play and game experiences contribute to a sense of initiative. Unsuccessful experiences promote feelings of doubt and shame. In the normal scheme of things a sense of accomplishment in other areas quickly compensates for most guilt and failure. For the child, the future tends to absolve the past.

#### D. Acquiring a Sense of Industry Versus Inferiority (School Age)

Acquiring a sense of *industry versus inferiority* is marked by the development of the skills necessary for life in general and preparation for adulthood. During this phase Erikson believed that children should be finding places among their peers instead of among adults. They need to work on mastering social skills and becoming competent and self-striving. They need feelings of accomplishment for having done well. Failure during this stage is difficult to accept, and the child has a distinct tendency to ward off failure at any price. During this period children begin to recognize that they must eventually break with accustomed family life. Dependence on parents begins to shift to reliance on social institutions such as the school, the team, or the gang.

Play activities during this phase tend to reflect competition through organized games and sports. Boys and girls generally play separately. Play for its own sake begins to lose importance at the end of

this stage. In conjunction with puberty, involvement in play merges into semisplayful and, eventually, real involvement in work.

E. Acquiring a Sense of Identity Versus Role Confusion (Early Adolescence)

When acquiring a sense of *identity versus role confusion* there is rapid body growth and sexual maturation. Masculine or feminine identity develops. Feelings of acceptance or rejection by peers are important. Conflicts frequently arise when peers say one thing and society says another. Identity is essential for making adult decisions about vocation and family life. Youth select people who mean the most to them as significant adults. These role models may be family members, friends, sports heroes, or other accomplished individuals in their lives. During this stage of development, the individual slowly moves into society as an interdependent and contributing member. A sense of identity assures the individual a definite place within his or her corner of society.

Organized sports help many youth acquire a sense of identity. Skill proficiency, team membership, and competitive victories contribute to a sense of identity. Failure and unsuccessful experiences, on the other hand, contribute to a sense of role confusion.

F. Acquiring a Sense of Intimacy Versus Isolation (Late Adolescence)

Erikson believed that in acquiring a sense of *intimacy versus isolation* an individual accepts himself or herself and goes on to accept others by fusing his or her personality with others. Childhood and youth are at an end. The individual settles down to the task of full participation in the community and begins to enjoy life with adult responsibilities as well as adult liberties. At this stage the individual shows readiness and ability to share mutual trust and to regulate cycles of work, procreation, and recreation.

Play through the games, sports, and recreational activities of adulthood serves as one important medium for fostering a sense of intimacy

with same-sex and opposite-sex teammates. Efforts on behalf of a team, whether in a competitive or recreational setting, reflect a level of intimacy due to the need for cooperative behaviors and teamwork. Failure to develop and refine game and sport skills, to at least a recreational level, can lead to a sense of isolation from a team or social group.

G. Acquiring a Sense of Generativity Versus Self-Absorption (Adulthood)

*Generativity versus self-absorption*, according to Erikson, refers to the course an individual pursues in society to provide the next generation with the hope, virtues, and wisdom he or she has accumulated. It also includes parental responsibility to uphold society's interests in child care, education, the arts and sciences, and cultural traditions. This stage is manifested when an individual shows more interest in the next generation than in his or her problems.

In a movement sense, generativity may be viewed as wanting to pass on the joys and values of play, games, and sport activities to the next generation for their enjoyment and self-fulfillment. Failure during this stage involves self-absorbed disappointment and the inability to accept one's waning capabilities as middle age approaches.

H. Acquiring a Sense of Integrity Versus Despair (Mature Adult and Old Age)

During this final stage, in which the mature adult acquires a sense of *integrity versus despair*, Erikson believed that the individual accomplishes the fullest sense of trust as the assured reliance on the integrity of significant others. A different love of one's parents is established. Parents are seen as individuals with weaknesses as well as strengths, and deserving of love for who they are and not what they are. Integrity provides a successful solution to an opposing sense of despair. Fulfillment of this stage involves a sense of wisdom and a philosophy of life that often extends beyond the life cycle of the individual and relates directly to the future of new developmental cycles. Successfully meeting the challenge of this stage enables one to look back on

his or her life with all of its successes and failures, good times and bad times, and to do so with integrity. Failure to meet the challenges of this stage causes one to look back with remorse, and to look forward in despair.

Movement in the form of active play, games, recreational sport, and general mobility is of real importance during this stage. During this period, successful movement, whether it involves walking, driving a car, or swimming laps, means independence. Movement at this stage means freedom and life. Looking back upon one's movement accomplishments, and forward at declining capabilities, does not cause despair in the individual who meets the challenges of this stage. Instead, movement helps one to maintain competence and accept physical changes.

Jean Piaget

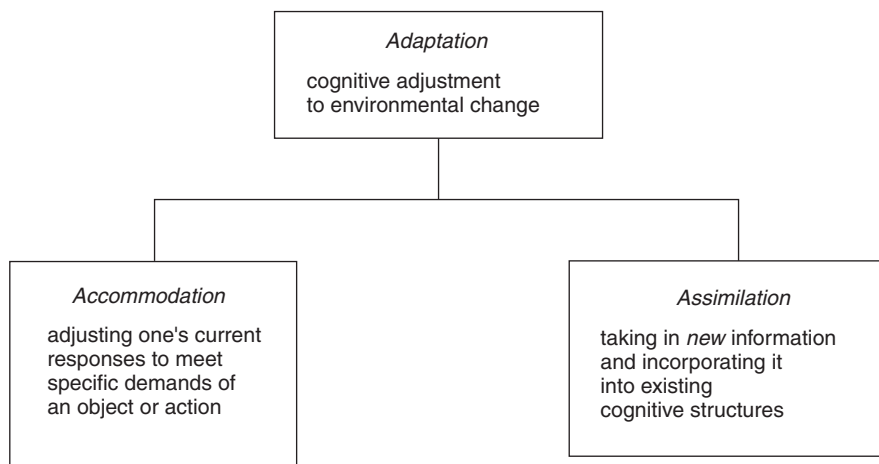
The developmental milestone theory of Jean Piaget (1952, 1954, 1969, 1974) is among the most popular of the theories postulated by experts in the field of child development because of its clarity and insight into and understanding of the development of cognition. Table 2.3 outlines Piaget's phases of cognitive development. Cognitive development,

according to Piaget, occurs through the process of adaptation. **Adaptation** requires one to make adjustments to environmental conditions and intellectualize these adjustments through the complementary processes of accommodation and assimilation (Figure 2.4).

**Accommodation** is adaptation that the child must make to the environment when new and incongruent information is added to his or her repertoire of possible responses. The individual adjusts the response to meet the demands of the specific challenge. Accommodation is a process that reaches outward toward reality and results in a visible change in behavior. For example, when playing in the shallow water of a bathtub or wading pool, a child learns to take into account many of the physical properties and realities of the water. However, when trying to swim in deep water, the child will have to go through a series of new actions (e.g., not being able to touch the bottom, letting go, floating, and breath holding) to accommodate to the new reality of deep water.

**Assimilation**, on the other hand, is Piaget's term for the interpretation of new information based on present interpretations. Assimilation involves taking in information from the environment

TABLE 2.3 Jean Piaget's Phases of Cognitive Development			
Phase	Characteristics	Approximate Age-Period	Defining Event
I Sensorimotor	The infant constructs meaning of her world by coordinating sensory experiences with movement.	Birth to 2 years	Basic assimilation and schema formation through movement
II Preoperational Thought	The young child displays increased symbolic thinking by linking his world with words and images.	2 to 7 years	Advanced assimilation by using physical activity to perform cognitive processes
III Concrete Operations	The child reasons logically about concrete events and can classify objects in her world into various sets.	7 to 11 years	Reversibility with intellectual experimentation through active play
IV Formal Operations	The adolescent is capable of reasoning more logically and in abstract and idealistic ways.	11 years onward	Deductive reasoning through abstract hypothesis formulation

**Figure 2.4**

Piaget's view was that adaptation occurs through the complementary processes of accommodation and assimilation.

and incorporating it into the individual's existing cognitive structures. If this information cannot be incorporated into existing structures because of small variations, accommodation will occur. However, if the information is too different from the existing structures, it will not be assimilated or accommodated. For example, giving a toddler a ball to toss may be a new experience, but after a series of accommodations (i.e., adjustments), the child may attempt to play catch. You would not, however, expect the child to challenge you to a game of basketball. Although basketball playing involves various forms of ball tossing, it is too different from playing toss and catch to be assimilated (i.e., incorporated) by the child.

A summary of Piaget's theory follows. Note the numerous implications for movement throughout Piaget's phases of cognitive development.

### CONCEPT 2.5

Higher cognitive structures are formulated through the processes of accommodation and assimilation, both of which rely on self-discovery through play and movement activity.

#### A. Sensorimotor Phase (Birth to 2 Years)

The *sensorimotor phase* is the period during which children learn to differentiate themselves from objects and others. Motor activity is critical because the child learns through his or her physical interactions with the world. During the sensorimotor phase of development, the major developmental tasks of infancy are coordination of the infant's actions or movement activities and his or her perceptions into a tenuous whole. The sensorimotor phase is composed of several overlapping stages.

1. *Use of reflexes* (birth to 1 month): Piaget believed that there is a continuation of prenatal reflexes for the purpose of enabling the infant to gain additional information about his or her world. Reflexes are spontaneous repetitions caused by internal and external stimulation. Through reflexes and stereotypical behaviors, rhythm is established through practice, and habits are formed that later emerge as voluntary movements.
2. *Primary circular reactions* (1 to 3 months): Primary circular reactions refer to the assimilation of a previous experience and the recognition of the stimulus that triggered the



reaction required to generate the experience. At this point in the infant's development, new or past experiences have no meaning unless they become part of the infant's primary circular reaction pattern. During this period, reflexive movement is gradually replaced with voluntary movement, but neurological maturity must be reached before sensations can be understood. What previously had been automatic behavior for the infant is now repeated voluntarily, and more than one sensory modality can be used at a time. Accidentally acquired responses become new sensorimotor habits.

3. *Secondary circular reactions* (3 to 9 months): During this stage, the infant tries to make events last and tries to make them occur. Secondary circular reactions mean that the focus of the infant is on retention, not repetition, as in the previous stage. The infant now tries to create a state of permanency by repeating and prolonging primary circular reactions with secondary reactions. During this stage, two or more sensorimotor experiences are related to one experiential sequence or schema. **Schema**, as used here, is Piaget's term for a pattern of physical or motor action occurring in early infancy. It should not be confused with Schmidt and Lee's (2005) use of the word "schema," in which they are referring to later motor skills. For the infant at the secondary circular reactions stage, vision is the prime coordinator of behavior. The other sensory modalities are used to a lesser degree. This is the stage, according to Piaget, where imagination, play, and emotion begin to appear.
4. *Application of the secondary schemata to new situations* (8 to 12 months): Piaget viewed this stage as being characterized by the child's ability to distinguish means from ends; that is, being able to produce the same result in more than one way. During this period, children use previous behavioral achievements primarily as the

basis for adding new achievements to their expanding repertoire. As a result, there is increased exploration in which ends and means are differentiated through experimentation. Accommodation occurs as the result of experimentation, and the infant can now experience action by observation.

5. *Tertiary circular reactions* (12 to 18 months): Tertiary circular reactions is Piaget's term for the infant's discovery of new means through active experimentation. During this period, curiosity and novelty-seeking behavior are developing. Fundamental reasoning comes into play and is developed. As a result, failure to remember is seen as failure to understand. The infant begins to develop spatial relationships upon discovering objects as objects. Imitation develops and play is important because the child repeats the action phase, linking cognitive processes to movement processes.
6. *Invention of new means through mental combinations* (12 to 24 months): During this stage, Piaget recognized a shift from sensorimotor experiences to increased reflection about these experiences. This represents the stepping-stone to the next phase, a more advanced level of intellectual behavior. Children at this stage are capable of discerning themselves as one object among many. Therefore, they tend to perceive and use objects for their intrinsic qualities. Additionally, they begin to relate objects to new actions without perceiving all of the actions. Sensorimotor patterns are slowly replaced by semimental functioning. Imitation copies the action or the symbol of the action. Parallel play appears, and identification, as a mental process, becomes evident by the end of this phase, depending on the level of the child's intellectual development. Furthermore, this period is characterized by the creation of means and not merely the discovery of means. The rudiments of insight begin to develop.

## B. Preoperational Thought Phase (2 to 7 Years)

During the *preoperational thought phase*, the first real beginnings of cognition occur. It is “preoperational” because the child is not yet capable of mentally manipulating objects and must rely on physical activity to do so. Additionally, the preoperational thought phase is a period of transition from self-satisfying behavior to rudimentary socialized behavior in young children. As a result, children attempt to adjust new experiences to previous patterns of thinking. Continuous investigation of one’s world develops, but the child knows the world only as he or she sees it. Assimilation (i.e., interpreting new information based on present interpretations) is the paramount task of the child. During this phase, emphasis on “why” and “how” becomes a primary tool for adaptation to occur. Conservation of quantity, involving such things as object permanence and conservation of volume, must be mastered before a concept of numbers can be developed.

Language begins to replace sensorimotor activity as a primary facilitator of learning and as the preferred mode of expressing thoughts. Additionally, events are judged by outward appearance regardless of their objective logic. The child responds to either the qualitative aspects of an event or its quantitative aspects, but not both simultaneously. As a result, the child is unable to merge concepts of objects, space, and causality into interrelationships with a concept of time. Time is a nebulous concept that eludes the child in this phase of development.

The child, according to Piaget, is egocentric (i.e., self-centered) in his or her relationship to the world rather than autistic (i.e., nonrelating) as in the sensorimotor phase. Play serves as an important means of assimilation and occupies most of the child’s waking hours. Imaginary play and parallel play are important tools for learning. Play also serves to enact the rules and values of one’s elders. Characteristic of the preoperational thought phase is the child’s widening of social interest in his or her world. As a result, egocentricity is reduced and social participation increases. The child begins to exhibit interest in relationships between people.

Understanding the social roles of “mother,” “father,” “sister,” and “brother” and their relationship to one another is important to the child at this phase.

## C. Concrete Operations Phase (7 to 11 Years)

During the *concrete operations phase* of development, the child becomes aware of alternative solutions, uses rules in thinking, and is able to differentiate between appearance and reality. It is called “concrete” because the child’s mental actions (i.e., “operations”) are still tied to concrete objects.

The concept of reversibility becomes established during this phase. Reversibility refers to the capacity of the child to understand that any change of shape, order, position, number, and so forth can be mentally reversed and returned to its original shape, order, position, or number. Reversibility enables the child to relate an event or thought to a total system of interrelated parts and to consider the event or thought from beginning to end or from end to beginning. This form of operational thought enhances the child’s mental capacity to order and relate experiences to an organized whole.

The concrete operational thought level presupposes that mental experimentation still depends on perception. At this phase perceptions are more accurate, and the child applies his or her interpretation of these environmental perceptions knowingly. The child examines the parts to gain knowledge of the whole and establishes means of classification for organizing parts into a hierarchical system.

The child uses play during this phase to understand his or her physical and social world. Rules and regulations are of interest to the child when applied to play. Play, however, loses its assimilative characteristics and becomes a balanced subordinate process of cognitive thought. As a result, curiosity finds expression in intellectual experimentation instead of active play alone.

## D. Formal Operations Phase (11 Onward)

During the *formal operations phase*, childhood ends and youth begins as the individual enters the world of ideas. In this fourth and final phase of cognitive development, a systematic approach to problem solving appears. Logical deduction by implication develops,

and the individual is capable of thinking vertically; that is, beyond the present. At this level the individual can dream and does not need concrete reality. Deduction by hypothesis and judgment by implication enable one to reason beyond cause and effect.

## Robert Havighurst

The theory of Robert Havighurst (1953, 1972; Havighurst & Levine, 1979) is based on the concept that successful achievement of developmental tasks leads to happiness and success with later tasks, whereas failure leads to unhappiness, social disapproval, and difficulty with later tasks. Havighurst disagreed with any theory that proposes an innate basis of growth and development. He believed that living is learning and growing is learning. Development, then, according to Havighurst, is the process of learning one's way through life. Havighurst conceived of successful development as requiring mastery of a series of tasks. At each level of development the child encounters new social demands. These demands, or tasks, arise out of three sources. First, tasks arise from physical maturation. Such tasks as learning to walk, talk, and get along with one's age-mates are maturation-based. Second, tasks arise out of the cultural pressures of society, such as learning how to read and learning to be a responsible citizen. The third source of tasks is oneself. Tasks arise out of the maturing personality and the individual's values and unique aspirations.

Havighurst's theory has implications for all age levels. His theory is of particular importance to educators because it describes teachable moments in which a person's body and self are ready to achieve a certain task. Educators can better time their efforts at teaching by identifying the tasks suitable for a particular level of development, being fully aware that a child's level of readiness is influenced by biological, cultural, and self factors interacting with one another.

Havighurst has suggested six major periods of development: infancy and early childhood (birth through 5 years), middle childhood (6 through 12 years), adolescence (13 through 18 years), early



## CONCEPT 2.6

Numerous developmental tasks must be achieved for the normal process of development to proceed unencumbered.

adulthood (19 through 29 years), middle adulthood (30 through 60 years), and later maturity (60 years and up). A summary of Havighurst's developmental tasks in outline form follows. The reader is cautioned to be flexible in the interpretation of these tasks with respect to age. Ages are only convenient approximations and should not be viewed as rigid time frames. However, significant delay beyond these age boundaries would, according to Havighurst, represent failure in a developmental task, with resulting unhappiness and great difficulty with future tasks.

- A. Infancy and early childhood (birth to 5 years)
  1. Learning to walk.
  2. Learning to take solid foods.
  3. Learning to talk.
  4. Learning to control the elimination of bodily wastes.
  5. Learning sex differences and sexual modesty.
  6. Acquiring concepts and language to describe social and physical reality.
  7. Readiness for reading.
  8. Learning to distinguish right from wrong and developing a conscience.
- B. Middle childhood (6 to 12 years)
  1. Learning physical skills necessary for ordinary games.
  2. Building a wholesome attitude toward oneself.
  3. Learning to get along with age-mates.
  4. Learning an appropriate sex role.
  5. Developing fundamental skills in reading, writing, and calculating.
  6. Developing concepts necessary for everyday living.
  7. Developing a conscience, morality, and a scale of values.

8. Achieving personal independence.
  9. Developing acceptable attitudes toward society.
- C. Adolescence (13 to 18 years)
1. Achieving mature relations with both sexes.
  2. Achieving a masculine or feminine social role.
  3. Accepting one's physique.
  4. Achieving emotional independence of adults.
  5. Preparing for marriage and family life.
  6. Preparing for an economic career.
  7. Acquiring values and an ethical system to guide behavior.
  8. Desiring and achieving socially responsible behavior.
- D. Early adulthood (19 to 29 years)
1. Selecting a mate.
  2. Learning to live with a partner.
  3. Starting a family.
  4. Rearing children.
  5. Managing a home.
6. Starting an occupation.
  7. Assuming civic responsibility.
- E. Middle adulthood (30 to 60 years)
1. Helping teenage children to become happy and responsible adults.
  2. Achieving adult social and civic responsibility.
  3. Satisfactory career achievement.
  4. Developing adult leisure-time activities.
  5. Relating to one's spouse as a person.
  6. Accepting the physiological changes of middle age.
  7. Adjusting to aging parents.
- F. Later maturity (60 years and up)
1. Adjusting to decreasing strength and health.
  2. Adjusting to retirement and reduced income.
  3. Adjusting to death of spouse.
  4. Establishing relations with one's age group.
  5. Meeting social and civic obligations.
  6. Establishing satisfactory living quarters.

## SUMMARY

The process of development is commonly viewed as hierarchical. That is, the individual proceeds from general to specific, and from simple to complex, in gaining mastery and control over his or her environment. Erik Erikson's phase-stage theory, Jean Piaget's developmental milestone theory, and Robert Havighurst's developmental task theory make it obvious that the human organism throughout all aspects of its development is moving from comparatively simple forms of existence to more complex and sophisticated levels of development. Until recently, these levels of development have been expressed primarily in terms of the cognitive and affective behaviors of the individual, with only indirect attention

given to motor development. Ecological theories, particularly dynamic systems theory and behavior setting theory, offer newer perspectives on development and are particularly relevant to the study of motor behavior.

Although the theoretical formulations of Erikson, Piaget, and Havighurst are of value, none adequately address motor development. It is appropriate, therefore, that a theoretical model of motor development that integrates elements from each, plus a dynamic systems and behavior setting perspective, be put forth in order that we may describe and explain this important aspect of human development. Chapter 3, "Motor Development: A Theoretical Model," is dedicated to this end.

## QUESTIONS FOR REFLECTION

1. For some, unfortunately, theoretical models are viewed as "boring" or just an "ivory tower" exercise. Why do you think this is so and why are theoretical models of human development indeed important?
2. After looking briefly at the various conceptual viewpoints of human development, what ones are you most attracted to and why?

3. If developmental theories have real utility, how might they be practically applied in real teaching-learning situations?
4. What are your thoughts at this point about dynamic systems theory and phase-stage theory, which will both be applied throughout this text

and are utilized in the next chapter in the form of a Triangulated Hourglass Model for motor development?

5. Which of the theoretical models reviewed in this chapter makes the most sense to you? Why?

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## WEB RESOURCES

[www.people.cornell.edu/pages/ub11/](http://www.people.cornell.edu/pages/ub11/)

This site provides background information on Urie Bronfenbrenner, the Jacob Gould Sherman Professor of Human Development and Family Studies, and of Psychology at Cornell University. The site includes Professor Bronfenbrenner’s work as well as his curriculum vitae.

[www.unige.ch/piaget/](http://www.unige.ch/piaget/)

The Jean Piaget Archives homepage, a foundation that collects the works of Jean Piaget, psychologist and genetic epistemologist. The site includes a bibliography of work, monographs, theses, articles from periodicals, critical reviews, etc.

[www.piaget.org](http://www.piaget.org)

Homepage for the Jean Piaget Society. Information about Jean Piaget, the society, and publications described. Resources for students, Web links, and membership information included.

<http://facultyweb.cortland.edu/~ANDERSMD/ERIK/welcome.HTML>

Site provides background information on Erik Erikson and his eight stages of psychological development. Includes summary, biography, and references, as well as other links.