

PHYSICAL DEVELOPMENT

GENERAL OBJECTIVES OF THE SUBJECT

At the end of the course, Individuals will analyze the elements of the communication and will explain the basic principles of this course.

5. Physical Development

- 5.1 Framework for Studying Development
- 5.2 The Major Domains of Development
- 5.3 Percipience Development
- 5.4 Emotional-Social Development
- 5.5 The Process of Development
- 5.6 The Context of Development

5.1 Framework for Studying Development

If we are to organize information about human development from a variety of perspectives, we need some sort of framework that is both meaningful and manageable. Studying human development involves considering many details simultaneously. A framework provides us with categories for bringing together bits of information that we believe are related to one another. *Categories* let's simplify and generalize large quantities of information by clustering certain components. A framework helps us find our way in an enormously complex and diverse field. One way to organize information about development is in terms of these basic categories:

- 1) The major domains of development
- 2) The percipience development
- 3) The context of emotional-social development
- 4) The timing process of development

Let's look at each of these categories to see how they fit within a given framework.

5.2 The Major Domains of Development

Developmental change takes place in three fundamental domains: physical, cognitive, and emotional-social. Think how much you have changed in the years since you first entered school. Your body, the way you think, and how you interact with others are aspects of “*you*” that have undergone transformations and will continue to do so.

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Physical development involves changes that occur in a person's body, including changes in weight and height; in the brain, heart, and other organ structures and processes; and in skeletal, muscular, and neurological features that affect motor skills. Consider, for instance, the physical changes that take place at adolescence, which together are called *puberty*.

At puberty young people undergo revolutionary changes in growth and development. Adolescents catch up with adults in size and strength. Accompanying these changes is the rapid development of the reproductive system and attainment of reproductive capability—the ability to conceive children.

Hormonal and brain changes are also occurring. Historically, women have been valued for their reproductive ability. Some cultures continue to value—or devalue—women for their ability to produce sons as the father's heirs, and in some countries women are still the “*property*” of the husband (Moreau & Yousafzai, 2004). Moreover, the concepts “*woman*” and “*man*” are social creations that little girls and boys try to fit as they grow up.

Our efforts have biological and social consequences—how active we are, what we should weigh, what clothes we wear, what games we play, what and how much we eat, what kinds of schools we go to (if allowed), what work we do (*solely in the home or outside of the home*), if we are forced into marriage and childbearing at early ages (*or not*). Women's biology was described mainly by physicians and scientists who were mostly educated, economically privileged men; these men have had strong personal and political interests in describing women in ways that make it appear “*natural*” for women to play roles that are important for men's well-being.

At the turn of the 1900s, when American women tried to enroll in colleges, scientists originally claimed women could not be educated because their brains were too small. As that claim became indefensible, they claimed that girls needed to devote energy to the proper functioning of their ovaries and womb—and if they divert this energy to their brains, their reproductive organs would shrivel, they would become sterile, and the human species would die out. Women who attempted to develop their intellectual capacities endured obstacles and ridicule while paving the way for other women who followed. The notion that women's reproductive organs need nurturing did not spare the working-class, poor, or ethnic minority women who labored in the factories and homes of the upper class. A century later, American women earn approximately half of all doctorates in psychology, comprise about 50 percent of new students at U.S. medical schools, and a woman was a leading candidate for the U.S. presidency (Sherrod, 2006).

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More remarkably, in Afghanistan, after more than 5,000 years of strict patriarchal oppression, women are slowly emerging as legal citizens to exercise their human rights of education, health care, the right to vote, and occupational pursuits (Armstrong, 2004).

Mary Whiton Calkins, 1863–1930, Early Developmentalist. Mary Calkins attended Smith College in Massachusetts in 1880. She then trained at Harvard under the direction of William James (though she was denied student registration) and set up an experimental lab and taught the first experimental psychology course at Wellesley College. Though she wrote a scholarly thesis in 1896 and sat for the Ph.D. exam at Harvard and performed brilliantly, she was denied the degree. She was an early pioneer in human development, published a text in introductory psychology, was elected by her colleagues in 1905 as the first female president of the American Psychological Association, and in 1918 was elected the first woman president of the American Philosophical Association.

5.3 Percipience Development

The percipience, awareness or cognizance development involves changes that occur in mental activity, including changes in sensation, perception, memory, thought, reasoning, and language (Baltes, Reuter-Lorenz, & Rösler, 2006). Again consider adolescence. Young people gradually acquire several substantial intellectual capacities. Compared with children, for instance, adolescents more ably think about abstract concepts such as democracy, social justice, morality, and environmental sustainability.

Young people become capable of dealing with hypothetical situations and achieve the ability to monitor and control their own mental experiences and thought processes. With advancing age adults may or may not maximize resources to maintain, stabilize, or regain cognitive functioning (Ebner, Freund, & Baltes, 2006).

5.4 Emotional-Social Development

Emotional-Social Development includes changes in an individual's personality, emotions, and relationships with others (Egeland, 2007). All societies distinguish between individuals viewed as children and individuals regarded as adults, and our relationships with children are qualitatively different from the relationships we have with adults. Adolescence is a period of social redefinition in which young people undergo changes in their social roles and status. Contemporary society distinguishes between people who are "*underage*," or minors, and those who have reached the age of majority, or adults.

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Adults are permitted to drive cars, drink alcohol, serve in the military, and vote. How each of us becomes a unique adult can be seen as the result of interaction between the personal “*self*” and our social environment. As we will see in some societies recognize adolescence or entry into adulthood through a special initiation ceremony—a rite of passage.

Although we differentiate these domains of development, we do not want to lose sight of the unitary nature of the individual. *Physical, cognitive, moral, and emotional social factors are intertwined in every aspect of development.* Scientists are increasingly aware that what happens in any one domain depends largely on what happens in the others (Sroufe, 2007).

5.5 The Processes of Development

Development meets us at every turn. Infants are born. The jacket the 2-year-old wears in the spring is outgrown by winter. At puberty, youth exhibit a marked spurt in size and acquire various secondary sexual characteristics. Individuals commonly leave their parents’ homes and set out on careers, establish families of their own, see their own children leave home, retire, and so on. The concepts of growth, maturation, and learning are important to our understanding of these events.

Growth takes place through metabolic processes from within. One of the most noticeable features of early development is the increase in size that occurs with age. The organism takes in a variety of substances, breaks them down into their chemical components, and then reassembles them into new materials to sustain life. Most organisms get larger as they become older. For some organisms, including humans, growth levels off as they approach sexual maturity. Others—many plant and fish forms—continue the growth process until they die

Maturation concerns the more or less automatic unfolding of biological potential in a set, irreversible sequence. Both growth and maturation involve biological change. *Growth* refers to the increase in the number of an individual’s cells: *maturation* concerns the development of the individual’s organs and limbs in relation to their ability to function and reflects the unfolding of genetically prescribed, or “*preprogrammed,*” patterns of behavior. Such changes are relatively independent of environmental events, as long as environmental conditions remain normal. Infant’s motor development after birth follows a regular sequence—grasping, sitting, crawling, standing, and walking. Similarly, at about 10 to 14 years of age, puberty brings many changes, including ovulation in girls and sperm production in boys, providing the potential for reproduction.

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Learning is the more or less permanent modification in behavior that results from the individual's experience in the environment. Learning occurs across the entire life span—in the family, among peers, at school, on the job, and in many other spheres. Learning differs from maturation in that maturation typically occurs without any specific experience or practice. Learning, however, depends on both growth and maturation, which underlie a person's readiness for certain kinds of activity, physical and mental. The ability to learn is clearly critical, for it allows each of us to adapt to changing environmental conditions. Hence, learning provides the important element of flexibility in behavior (Baltes, Reuter-Lorenz, & Rösler, 2006).

As we will emphasize in this text, the biological forces of growth and maturation should not be contrasted with the environmental forces of learning. Too often the nature-nurture controversy is presented as a dichotomy—nature *or* nurture. Rather, it is the interaction between heredity and environment that gives an individual her or his unique characteristics (Grusec & Hastings, 2007). As we interact with the world about us—as we act upon, transform, and modify the world—we in turn are shaped and altered by the consequences of our actions (Kegan, 1988; Piaget, 1963; Vygotsky, 1978). We literally change ourselves through our actions.

As we pass through life, our biological organism is altered by dietary practices, activity level, alcohol and drug intake, smoking habits, illness, exposure to X rays and radiation, and so on. Furthermore, as many of us enter school, finish school, seek a job, marry, settle on a career, have children, become grandparents, and retire, we arrive at new conceptions of self. In these and many other ways, we are engaged in a lifetime process in which we are forged and shaped as we interact with our environment (Charles & Pasupathi, 2003). In brief, development occurs throughout our lifetime—the prenatal period, infancy, childhood, adolescence, adulthood, and old age.

5.6 The Context of Development

To understand human development, we must consider the environmental context in which it occurs (Rathunde & Csikszentmihalyi, 2006). In his **ecological approach** to development, Urie Bronfenbrenner (1917–2005) (1979, 1986, 1997) asserts that the study of developmental influences must include the person's interaction with the environment, the person's changing physical and social settings, the relationship among those settings, and how the entire process is affected by the society in which the settings are embedded (Ceci, 2006). (See the *Human Diversity*, “Researching the Complex Effects of Immigration.”)

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Bronfenbrenner examines the *mutual* accommodations between the developing person and these changing contexts in terms of four levels of environmental influence, Bronfenbrenner's models are:

- 1) The Microsystem
 - a. the **microsystem** consists of the *network of social relationships and the physical settings in which a person is involved each day*.
- 2) The Mesosystem
 - a. the **mesosystem** consists of the interrelationships among the various settings in which the developing person is immersed.
- 3) The Exosystem
 - a. An environment that is "**external**" to the developing person is called an exosystem. The **exosystem** consists of social structures that directly or indirectly affect a person's life: school, the world of work, mass media, government agencies, and various social networks.
- 4) The Macrosystem
 - a. The **macrosystem** consists of the overarching cultural patterns of a society that are expressed in family, educational, economic, political, and religious institutions.

The ecological approach allows us to view the developing person's environment as a nested arrangement of structures, each contained within the next. The most immediate structure is the setting in which the person currently carries out his or her daily activities; each ensuing structure is progressively more encompassing, until we reach the most inclusive or societal level (Shiraeve & Levy, 2007). These dynamic interlocking structures challenge us to consider the risks and opportunities for development at each level. For instance, such problems as homelessness, child abuse and neglect, school violence, and psychopathology can be insightfully viewed as products of contextual factors that interact with individual and institutional vulnerabilities, particularly the family (Fiese & Spagnola, 2007).

The ecological approach allows us to see people actively immersed in a real world of everyday life. Imagine how much more extensive the information gathered would be if a researcher were allowed to record your day-to-day experiences as opposed to interviewing you in a clinical setting. However, this seeming advantage is also the ecological approach's major disadvantage: We usually have enormous difficulty studying people in contexts where a great many factors are operating simultaneously. Because so many factors bear on a person, we find it impractical, indeed impossible, to take them all into account. Only as we control a large array of factors can we secure a "**fix**" on

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any one of them. Critiquing his own model, Bronfenbrenner recognized a need to incorporate an investigation of biological, psychological, and behavioral aspects of the individual under study. Further, he saw the need to add the dimension of time to the model and added another system that he called the **chronosystem**, showing that there is change and constancy not only in the individual person but in society as well. As he states, “Not only do persons in the same age group share a life history of common experience, but those of a given age in different generations could have quite diverse experiences, depending on the period in which they live” (Bronfenbrenner, 2005).