

5 Child, Adolescent, and Adult Development

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KEY POINTS

- Development is not a linear process; it proceeds unevenly throughout the life cycle with periods of great activity and periods of relative quiescence in particular areas.
- Development is a process of complex interactions between genes and the environment and between a child and his or her caregivers.
- In general, development follows a fairly predictable course, particularly in early life; however, there can be a great deal of variability between individuals that is not necessarily indicative of dysfunction.
- Theorists have identified specific stages of development, which are often based on particular developmental tasks that must be accomplished during this stage to allow for healthy function later in life.

OVERVIEW

Development is a complex process that unfolds across the life span, guided along its course by intricate interactions between powerful forces. At the level of the organism, the child and his or her caregivers participate in a sophisticated interaction that begins before birth. The child is much more than a passive recipient of knowledge and skills passed down from the parents. Rather, the child is a lively participant, actively shaping parental behavior to ensure that his or her needs are met and the developmental process may continue. On the cellular and molecular level, environmental factors influence gene expression to alter function. Current thinking about development tends to downplay models that argue for the relative influence of “nature” versus “nurture;” instead, there is a focus on the complex interplay between these factors. Neurons live or die and the synaptic connections between them wither or grow stronger depending on experience. The results of this process will help determine the behavior of the organism and thus influence its future.

In addition to the interactions between external forces, interactions between particular realms of development are essential to the overall process. For example, increasing motor skills during toddlerhood allow a child a greater sense of

autonomy and control, thus allowing the child to build a sense of himself or herself distinct from the parents.

Development is not a steady linear process. It proceeds unevenly with periods of rapid growth in particular domains, interspersed with periods of relative quiescence. An understanding of development is essential to an understanding of the individual in health or in illness at any point in the life cycle. In this chapter, we begin with a discussion of some of the major contributors to current thinking about development. We then discuss the process of development throughout the life cycle, beginning in infancy.

MAJOR THEORIES OF DEVELOPMENT

Sigmund Freud (1856-1939)

Freud’s developmental theory is closely tied to his drive theory, which is best described in his 1905 work, *Three Essays on the Theory of Sexuality*.¹ In these essays, Freud outlined his theory of childhood sexuality and portrayed child development as a process that unfolds across discreet, universal, stages. He posited that infants are born as *polymorphously perverse*, meaning that the child has the capacity to experience libidinal pleasure from various areas of the body. Freud’s stages of development were based on the area of the body (oral, anal, or phallic) that is the focus of the child’s libidinal drive during that phase (Table 5-1). According to Freud, healthy adult function requires successful resolution of the core tasks of each developmental stage. Failure to resolve the tasks of a particular stage leads to a specific pattern of neurosis in adult life.

The first stage of development in Freud’s scheme is the *oral phase*, which begins at birth and continues through approximately 12 to 18 months of age. During this period, the infant’s drives are focused on the mouth, primarily through the pleasurable sensations associated with feeding. During this phase, the infant is wholly dependent on the mother; the infant must learn to trust the mother to meet his or her basic needs. Successful resolution of the oral phase provides a basis for healthy relationships later in life and allows the individual to trust others without excessive dependency. According to Freudian theory, an infant who is orally deprived may become pessimistic, demanding, or overly dependent as an adult.

Around 18 months of age, the oral phase gives way to the *anal phase*. During this phase, the focus of the child’s

Table 5-1 Corresponding Theoretical Stages of Development

Sigmund Freud: Psychosexual Phases	Erik Erickson: Psychosocial Stages	Jean Piaget: Stages of Cognitive Development
Oral (birth-18 mo)	Trust vs. Mistrust (birth-1 yr)	Sensorimotor (birth-2 yr)
Anal (18 mo-3 yr)	Autonomy vs. Shame and Doubt (1-3 yr)	Preoperational (2-7 yr)
Phallic (3-5 yr)	Initiative vs. Guilt (3-6 yr)	
Latency (5-12 yr)	Industry vs. Inferiority (6-12 yr)	Concrete operations (7-12 yr)
Genital (12-18 yr)	Identity vs. Role Confusion (12-20 yr)	Formal operations (11 yr-adulthood)

libidinal energy shifts to his or her increasing control of bowel function through voluntary control of the anal sphincter. Failure to successfully negotiate the tasks of the anal phase can lead to the anal-retentive character type; affected individuals are overly meticulous, miserly, stubborn, and passive-aggressive, or the anal-expulsive character type, described as reckless and messy.

Around 3 years of age, the child enters into the *phallic phase* of development, during which the child becomes aware of the genitals and they become the child's focus of pleasure.² The phallic phase, which was described more fully in Freud's later work, has been subjected to greater controversy (and revision by psychoanalytic theorists) than the other phases. Freud believed that the penis was the focus of interest by children of both genders during this phase. Boys in the phallic phase demonstrate exhibitionism and masturbatory behavior, whereas girls at this phase recognize that they do not have a phallus and are subject to *penis envy*.

Late in the phallic phase, Freud believed that the child developed primarily unconscious feelings of love and desire for the parent of the opposite sex, with fantasies of having sole possession of this parent and aggressive fantasies toward the same-sex parent. These feelings are referred to as the *Oedipal complex* after the figure of Oedipus in Greek mythology, who unknowingly killed his father and married his mother. In boys, Freud posited that guilt about Oedipal fantasies gives rise to *castration anxiety*, which refers to the fear that the father will retaliate against the child's hostile impulses by cutting off his penis. The Oedipal complex is resolved when the child manages these conflicting fears and desires through identification with the same-sex parent. As part of this process, the child may seek out same-sex peers. Successful negotiation of the Oedipal complex provides the foundation for secure sexual identity later in life.³

At the end of the phallic phase, around 5 to 6 years of age, Freud believed that the child's libidinal drives entered a period of relative inactivity that continues until the onset of puberty. This period is referred to as *latency*. This period of calm between powerful drives allows the child to further develop a sense of mastery and ego-strength, while integrating the sex-role defined in the Oedipal period into this growing sense of self.¹

With the onset of puberty, around 11 to 13 years of age, the child enters the final developmental stage in Freud's model, called the *genital phase*, which continues into young adulthood.³ During this phase, powerful libidinal drives

resurface, causing a reemergence and reworking of the conflicts experienced in earlier phases. Through this process, the adolescent develops a coherent sense of identity and is able to separate from the parents.

Erik Erikson

Erik H. Erikson (1902-1994) modified the ideas of Freud and formulated his own psychoanalytic theory based on phases of development.⁴ Erikson came to the United States just before World War II; as the first child analyst in Boston. He studied children at play, as well as Harvard students, and he studied a Native American tribe in the American West. Like Freud, he presented his theory in stages; and like Freud, he believed that problems present in adults are largely the result of unresolved conflicts of childhood. However, Erikson's stages emphasize not the person's relationship to his or her own sexual urges and instinctual drives, but rather, the relationship between a person's maturing ego and both the family and the larger social culture in which he or she lives.

Erikson proposed eight developmental stages that cover an individual's entire life.⁴ Each stage is characterized by a particular challenge, or what he called a "psychosocial crisis." The resolution of the particular crisis depends on the interaction between an individual's characteristics and the surrounding environment. When the developmental task at each stage has been completed, the result is a specific ego quality that a person will carry throughout the other stages. (For example, when a baby has managed the initial stage of Trust vs. Mistrust, the resultant ego virtue is Hope.)

Erikson's stages describe a vital conflict or tension in which the "negative" pole is necessary for growth. For example, in describing the initial stage of Trust vs. Mistrust, Erikson notes that babies interact with their caregivers, and what is important is that the baby comes to find predictability, consistency, and reliability in the caretaker's actions. In turn, the baby will develop a sense of trust and dependability. However, this does not mean a baby should not experience mistrust; Erikson noted that the infant must experience distrust in order to learn trust discerningly.

It should be noted that Erikson did not believe that a person could be "stuck" at any one stage; in his theory, if we live long enough we must pass through all of the stages. The forces that push a person from stage to stage are biological maturation and social expectations. Erikson believed that success at earlier stages affected the chances of success at later ones. For example, the child who develops a firm sense

of trust in his or her caretakers is able to leave them and to explore the environment, in contrast to the child who lacks trust and who is less able to develop a sense of autonomy. But, whatever the outcome of the previous stage, a person will be faced with the tasks of the subsequent stage.

Jean Piaget

Like Erikson, Jean Piaget (1896–1980) was another developmental stage theorist. Piaget was the major architect of cognitive theory, and his ideas provided a comprehensive framework for an understanding of cognitive development. Piaget first began to study how children think while he was working for a laboratory, designing intelligence testing for children. He became interested not in a child answering a question correctly, but rather, when the child's answer was wrong, *why* it was wrong.⁵ He concluded that younger children think differently than do older children. Through clinical interviews with children, watching children's spontaneous activity, and close observations of his own children, he developed a theory that described specific periods of cognitive development.

Piaget maintained that there are four major stages: the sensorimotor intelligence period, the preoperational thought period, the concrete operations period, and the formal operations period (see Table 5-1).⁶ Each period has specific features that enable a child to comprehend certain kinds of knowledge and understanding. Piaget believed that children pass through these stages at different rates, but maintained that they do so in sequence, and in the same order.

Characteristics of the sensorimotor intelligence period (from birth to about 2 years) are that an infant uses senses and motor skills to obtain information and an understanding about the world around him or her. There is no conceptual or reflective thought; an object is "known" in terms of what an infant can "do" to it. A significant cognitive milestone is achieved when the infant learns the concept of object permanence, that is, that an object still exists when it is not in the child's visual field. By the end of this period a child is aware of self and other, and the child understands that they are but one object among many.

From ages 2 to 6 a child uses preoperational thought, where the child begins to develop symbolic thinking, including language. The use of symbols contributes to the growth of the child's imagination. A child might use one object to represent another in play, such as a box becoming a racecar. Piaget also described this period as a time when preschoolers are characterized by egocentric thinking. Egocentrism means that the child sees the world from his or her own perspective and has difficulty seeing another person's point of view. For a child of this age, everyone thinks and feels the same way the child does. The capacity to acknowledge another's point of view develops gradually during the preschool years; while a 2-year-old will participate in parallel play with a peer, a 4-year-old will engage in cooperative play with another child. Toward the end of this period, a child will begin to understand and to coordinate several points of view.

Just as a child in this stage fails to consider more than one perspective in personal interactions, he or she is unable to

consider more than one dimension. In his famous experiment, Piaget demonstrated that a child in a preoperational stage is unable to consider two perceptual dimensions (such as height and width). A child is shown two glasses (I and II), which are filled to the same height with water. The child agrees that the glasses have the same amount of liquid. Next, the child pours the liquid from glass I to another, shorter and wider glass (III) and is asked if the amount of liquid is still the same. The child in the preoperational stage will answer "No," that there is more water in glass I because the water is at a higher level. By age 7, the child will understand that there is the same amount of liquid in each glass; this is termed *conservation of liquids*, and it is a concept children master when they are entering the next stage. Children also learn conservation of number, mass, and substance as they mature.

During middle childhood (ages 7 to 11), Piaget described a child's cognitive style as concrete operational. The child is able to understand and to apply logic and can interpret experiences objectively, instead of intuitively. Children are able to coordinate several perspectives and are able to use concepts, such as conservation, classification (a bead can be both green and plastic, whereas a preoperational child would see the bead as either green or plastic), and seriation (blocks can be arranged in order of largest to smallest).

These "mental actions" enable children to think systematically and with logic; however, their use of logic is limited to mostly that which is tangible.⁶ The final stage of Piaget's cognitive theory is formal operations, which occurs around age 11 and continues into adulthood. In this stage, the early adolescent and then the adult is able to consider hypothetical and abstract thought, can consider several possibilities or outcomes, and has the capacity to understand concepts as relative rather than absolute. In formal operations, a young adult is able to discern the underlying motivations or principles of something (such as an idea, a theory, or an action) and can apply them to novel situations.

Piaget conceptualized cognitive development as an active process by which children build cognitive structures based on their interactions with their environment. Similarly, he determined that moral development is a developmental process. Piaget described the earliest stages of moral reasoning as based on a strict adherence to rules, duties, and obedience to authority without questioning. Considered in parallel to his stages of cognitive development, the preoperational child sees rules as fixed and absolute, and punishment as automatic. For the child in concrete operations, rules are mutually accepted and fair, and are to be followed to the letter without further consideration; however, as the child moves from egocentrism to perspective-taking he or she begins to see that strict adherence to the rules can be problematic. With formal operations, a child gains the ability to act from a sense of reciprocity, and is able to coordinate his or her perspective with that of others, thus basing what is "right" on solutions that are considered most fair.

Lawrence Kohlberg

Lawrence Kohlberg (1927–1987) elaborated on Piaget's work on moral reasoning and cognitive development, and identified

a stage theory of moral thinking that is based on the idea that cognitive maturation affects reasoning about moral dilemmas. Kohlberg described six stages of moral reasoning, determined by a person's thought process, rather than the moral conclusions the person reaches.⁷ He presented a person with a moral dilemma and studied the person's response; the most famous dilemma involved Heinz, a poor man whose wife was dying of cancer. A pharmacist had the only cure, and the drug cost more money than Heinz would ever have.

Heinz went to everyone he knew to borrow the money, but he could only get together about half of what it cost. He told the druggist that his wife was dying and asked him to sell it cheaper or let him pay later. But the druggist said "No." The husband got desperate and broke into the man's store to steal the drug for his wife. Should the husband have done that? Why?⁷

How a person responds to such a dilemma places the person within three levels of moral reasoning: preconventional, conventional, and postconventional. A child's answer would generally be at the first two levels, with a preschooler most likely at level I and an elementary school child at level II. Kohlberg stressed that moral development is dependent on a person's thought and experience, which is closely related to the person's cognitive maturation.

Kohlberg is not without his critics, who view his schema as Western, predominantly male, and hierarchical. For example, in many non-Western ethnic groups the good of the family or the well-being of the community takes moral precedence over all other considerations.⁸ Such groups would not score well at Kohlberg's post-conventional level. Another critic, Carol Gilligan, sees Kohlberg's stages as biased against women. She believed that Kohlberg did not take into account the gender differences of how men and woman make moral judgments, and as such, his conception of morality leaves out the female voice.⁹ She has viewed female morality as placing a higher value on interpersonal relationships, compassion, and caring for others than on rules and rights. However, despite important differences between how men and women might respond when presented with an ethical dilemma, research has shown that there is not a significant moral divide between the genders.¹⁰

Attachment Theory: John Bowlby and Mary Ainsworth

John Bowlby (1907-1990) was a British psychoanalyst who was interested in the role of early development in determining psychological function later in life. Bowlby particularly focused his attention on the study of *attachment*, which can be defined as the emotional bond between caregiver and infant. Bowlby's theory was grounded in his clinical work with families disrupted by World War II and with delinquent children at London's Child Guidance Clinic. Attachment theory also had its roots in evolutionary biology and studies of animal behavior, such as Harry Harlow's studies of rhesus monkeys deprived of maternal contact after birth.

Bowlby argued that human infants are born with a powerful, evolutionarily derived drive to connect with the mother.¹¹ Infants exhibit *attachment behaviors* (such as smiling, sucking,

and crying) that facilitate the child's connection to the mother. The child is predisposed to psychopathology if there are difficulties in forming a secure attachment, for example, in a mother with severe mental illness, or there are disruptions in attachment (such as prolonged separation from the mother). Bowlby described three stages of behavior in children who are separated from their mother for an extended period of time.¹² First, the child will *protest* by calling or crying out. Then the child exhibits signs of *despair*, in which he or she appears to give up hope of the mother's return. Finally, the child enters a state of *detachment*, appearing to have emotionally separated himself or herself from the mother and initially appearing indifferent to her if she returns.

Mary Ainsworth (1913-1999) studied under Bowlby and expanded on his theory of attachment. She developed a research protocol called the *strange situation*, in which an infant is left alone with a stranger in a room briefly vacated by the mother.¹³ By closely observing the infant's behavior during both the separation and the reunion in this protocol, Ainsworth was able to further describe the nature of attachment in young children. Based on her observations, she categorized the attachment relationships in her subjects as secure or insecure. Insecure attachments were further divided into the categories of insecure-avoidant, insecure-resistant, and insecure-disorganized/disoriented. Trained raters can consistently and reliably classify an infant's attachments into these categories based on specific, objective patterns of behavior. Ainsworth found that approximately 65% of infants in a middle-class sample had secure attachments by 24 months of age.

Research into early attachment and its role in future psychological function is ongoing, and attachment theory continues to have a major influence in the study of child development and psychopathology. It has also influenced how the legal system approaches children, for example, contributing to a shift toward the "best interests of the child" doctrine in determining custody decisions that began in the 1970s.

BRAIN DEVELOPMENT

Normal brain development is the result of a series of orderly events that occur both in utero and after birth. Recent research suggests that the brain continues to develop well into adulthood. In addition, neurodevelopment is affected by the interaction between gene expression and environmental events, which is to say that both nature and nurture play an important role.

The mature human brain is believed to have at least 100 billion cells. Neurons and glial cells derive from the neural plate, and during gestation new neurons are being generated at the rate of about 250,000 per minute.¹⁴ Once they are made, these cells migrate, differentiate, and then establish connections to other neurons. Brain development occurs in stages, and each stage is dependent on the stage that comes before. Any disruption in this process can result in abnormal development, which may or may not have clinical relevance. It is believed that disruptions that occur in the early stages of brain development are linked to more significant pathology

and those that occur later are associated with less diffuse problems.¹⁵

By around day 20 of gestation, primitive cell layers have organized to form the neural plate, which is a thickened mass comprised primarily of ectoderm. Cells are induced to form neural ectoderm in a complicated series of interactions between them. The neural plate continues to thicken and fold, and by the end of week 3 the neural tube (the basis of the nervous system) has formed (Figure 5-1).¹⁶

The neuroepithelial cells that make up the neural tube are the precursors of all central nervous system (CNS) cells, including neurons and glial cells. As the embryo continues to develop, cells of the CNS differentiate, proliferate, and migrate. Differentiation is the process whereby a primitive cell gains specific biochemical and anatomical function. Proliferation is the rapid cellular division (mitosis) that occurs near the inner edge of the neural tube wall (ventricular zone) and is followed by migration of these cells to their “correct” location. As primitive neuroblasts move out toward the external border of the thickening neural tube, this “trip” becomes longer and more complicated. This migration results in six cellular layers of cerebral cortex, and each group of migrating cells must pass through the layers that formed previously (Figure 5-2). It is believed that alterations in this process can result in abnormal neurodevelopment, such as a finding at autopsy of abnormal cortical layering in the brains of some patients with schizophrenia.¹⁷

Once an immature neuron arrives at its final location, it extends a single axon and up to several dendrites to establish connections to other neurons. The synapse, or the end structure of a neuron, makes contact with the dendrites of neighboring neurons. Neuronal growth and proliferation is determined by signals (such as neurotransmitters and growth factors). During subsequent stages of fetal development these connections continue to proliferate, such that at birth, a person has almost all the neurons that individual will use in his or her lifetime.

Postnatal brain development is a period of both continued cellular growth and fine-tuning the established brain circuitry with processes of cellular regression (including apoptosis and pruning).¹⁵ While the human brain continues to grow and to mature into the mid-twenties, the brain at birth weighs approximately 10% of the newborn’s body weight, compared to the adult brain, which is about 2% of body weight. This growth is due to dendritic growth, myelination, and glial cell growth.

Apoptosis, or programmed cell death, is a normal process that improves neuronal efficiency and accuracy by eliminating cells that fail to function properly. This may include extinguishing temporary circuits that were necessary at earlier periods during development, but that are no longer required. This system of first overgrowth and later pruning helps to stabilize synaptic connections and also provides the brain with the opportunity to establish plasticity in response to the environment.

There are “critical periods” of development when the brain requires certain environmental input to develop normally. For example, at age 2 to 3 months there is prominent metabolic activity in the visual and parietal cortex, which

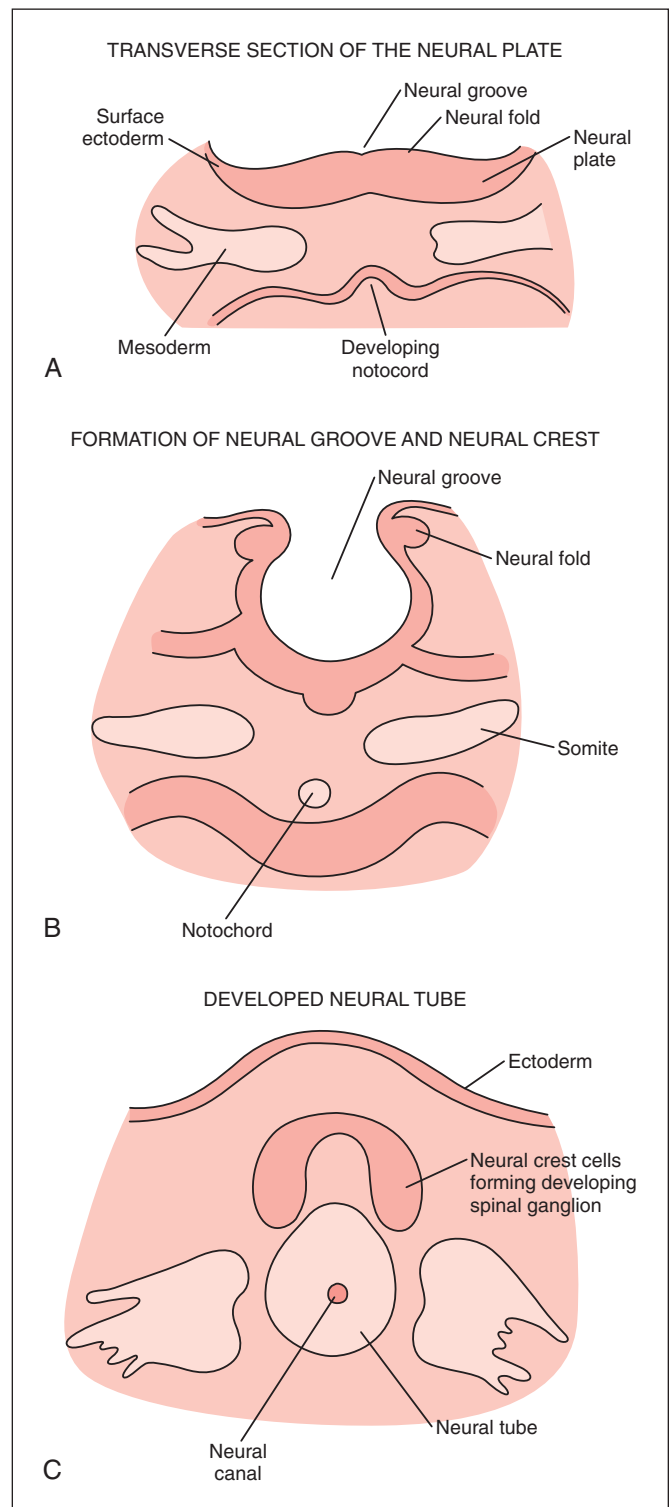


Figure 5-1 The embryonic development of the nervous system. The nervous system develops out of the outer layer of embryonic cells, called *ectoderm*. During the third week of development, the ectoderm along the midline of the embryo’s dorsal surface thickens to form the *neural plate* (1A). The center of the neural plate indents to form the neural groove. Over the next week, the groove deepens as the *neural folds* along each side of the neural groove curl toward each other at the midline (1B). By the end of the third week of gestation, the two neural folds have joined together at the midline to form the *neural tube*, which is the basis of the entire nervous system (1C). *Neural crest* cells at the dorsum of the neural tube separate to form the basis of the peripheral nervous system.

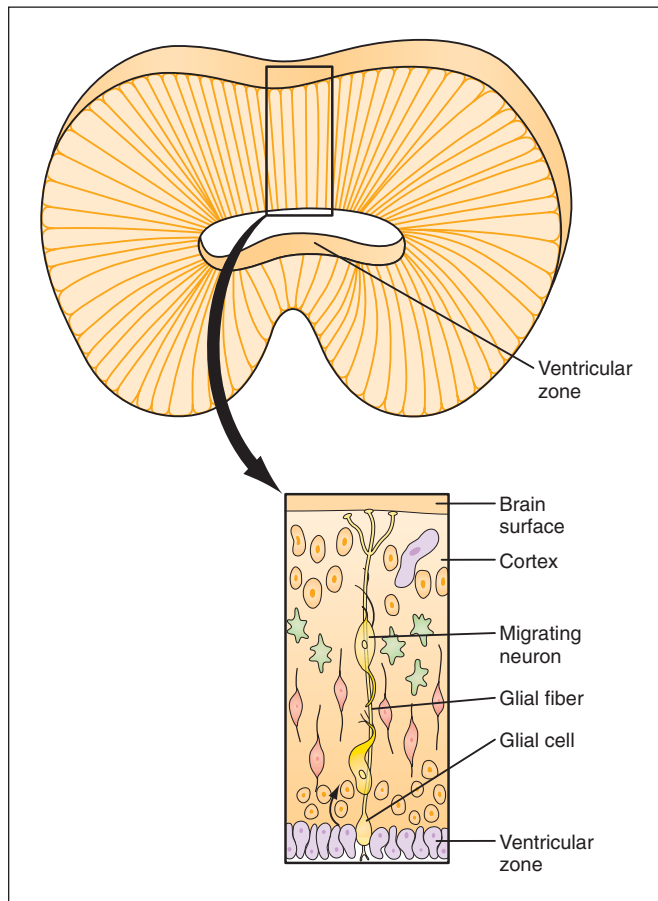


Figure 5-2 The process of neuronal migration during brain development. Neurons originate from the proliferation of primitive neuroblasts in the ventricular zone. They must then migrate outward toward the brain surface to their ultimate destination in the cortex. Glial cells are thought to assist in the migration process by providing longitudinal fibers to guide the migrating cell.

corresponds with the development of an infant's ability to integrate visual-spatial stimuli (such as the ability to follow an object with one's eyes). If the baby's visual cortex is not stimulated, this circuitry will not be well established. Synaptic growth continues rapidly during the first year of life, and is followed by pruning of unused connections (a process that ends sometime during puberty).

Myelination of neuronal axons begins at birth, and occurs first in the spinal cord and brainstem and then in the brain. The cerebral cortex is not fully myelinated until young adulthood. Myelin acts to insulate axons and facilitates more efficient information-processing; however, myelin inhibits plasticity because a myelinated axon is less able to change connections in response to a stimulus.

Newer imaging techniques have made it possible to continue to study patterns of brain development into young adulthood. In one longitudinal study of 145 children and adolescents, it was found that there is a second period of synaptogenesis (primarily in the frontal lobe) just before puberty that results in a thickening of gray matter followed by further pruning.¹⁸ Perhaps this is related to the develop-

ment of executive-function skills noted during adolescence. In another study, researchers found that white matter growth begins at the front of the brain in early childhood and moves caudally, and subsides after puberty. Spurts of growth from ages 6 to 13 were seen in the temporal and parietal lobes and then dropped off sharply, which may correlate with the critical period for language development.¹⁹

Social and emotional experiences help contribute to normal brain development from a young age and continue through adulthood. Environmental input can shape neuronal connections that are responsible for processes (e.g., memory, emotion, and self-awareness).²⁰ The limbic system, hippocampus, and amygdala continue to develop during infancy, childhood, and adolescence. The final part of the brain to mature is the prefrontal cortex, and adulthood is marked by continued refinement of knowledge and learned abilities, as well as by executive function and by abstract thinking.

Infancy (Birth to 18 Months)

Winnicott famously remarked, "There is no such thing as a baby. There is only a mother and a baby."²¹ In this statement, we are reminded that infants are wholly dependent on their caretakers in meeting their physical and psychological needs. At birth, the infant's sensory systems are incompletely developed and the motor system is characterized by the dominance of primitive reflexes. Because the cerebellum is not fully formed until 1 year of age, and myelination of peripheral nerves is not complete until after 2 years of age, the newborn infant has little capacity for voluntary, purposeful movement. However, the infant is born with hard-wired mechanisms for survival that are focused on the interaction with the mother. For instance, newborns show a visual preference for faces and will turn preferentially toward familiar or female voices. The rooting reflex, in which the infant turns toward stimulation of the cheek or lips, the sucking reflex, and the coordination of sucking and swallowing allow most neonates to nurse successfully soon after birth. Though nearsighted, a focal length of 8 to 12 inches allows the neonate to gaze at the mother's face while nursing. This shared gaze between infant and mother is one of the early steps in the process of attachment.

The infant spends more than 16 hours each day sleeping in the first weeks of life. Initially, sleep occurs in irregular intervals evenly dispersed throughout the day and night. As the nervous system matures, sleep patterns shift, with a gradual decline in the total sleep time and a consolidation of this time into longer periods during the night. By 6 months of age, 70% of infants will be sleeping through the night for a period of 6 hours or more, to the relief of their weary parents, with extended naps during the day to meet their still considerable need for sleep.

Temperament

Infants demonstrate significant variability in their characteristic patterns of behavior and their ways of responding to the environment. Some of these characteristics appear to be inborn, in that they can be observed at an early age and remain fairly constant throughout the life span. The work of

Table 5-2 The Nine Dimensions of Temperament

Activity Level	The level of motor activity demonstrated by the child and the proportion of active to inactive time
Rhythmicity	The regularity of timing in the child's biological functions such as eating and sleeping
Approach or Withdrawal	The nature of the child's initial response to a new situation or stimulus
Adaptability	The child's long-term (as opposed to initial) response to new situations
Threshold of Responsiveness	The intensity level required of a stimulus to evoke a response from the child
Intensity of Reaction	The energy level of a child's response
Quality of Mood	The general emotional quality of the child's behavior, as measured by the amount of pleasant, joyful, or friendly behavior versus unpleasant, crying, or unfriendly behavior
Distractibility	The effect of extraneous stimuli in interfering with or changing the direction of the child's activity
Attention Span and Persistence	The length of time the child pursues a particular activity without interruption and the child's persistence in continuing an activity despite obstacles

Stella Chess and Alexander Thomas in the New York Longitudinal Study helped capture this variability in their description of temperament.²² Temperament, as defined by Chess and Thomas, refers to individual differences in physiological responses to the environment. Chess and Thomas described nine behavioral dimensions of temperament, as outlined in Table 5-2.

Based on these nine dimensions, Chess and Thomas found that 65% of children fit into three basic categories of temperaments. Forty percent of children in their study were categorized as “easy or flexible.” The easy child tends to be calm, adaptable, easily soothed, and regular in his or her patterns of eating and sleeping. Fifteen percent of children were described as “slow to warm up or cautious.” Children in this group tended to withdraw or to react negatively to new situations, but their reactions gradually become more positive with repeated exposure. Ten percent of children were categorized as “difficult, active, or feisty.” These children tended to be fussy, less adaptable to changes in routine, irregular in feeding and sleeping patterns, fearful of new people and situations, and intense in their reactions. The remaining 35% of children in the study did not fit any single pattern of behavior, but rather some combination of behaviors from these categories.

Chess and Thomas hypothesized that different parenting styles would be optimal for children of different temperaments.²³ They coined the term *goodness of fit* to describe the degree to which an individual child's environment is compatible with the child's temperament in a way that allows the child to achieve his or her potential and to develop healthy self-esteem. When the child's temperament is not accommodated, there is a *poorness of fit* that may lead to negative self-evaluation and to emotional problems later in life.

Motor Development in Infancy

Primitive reflexes include the grasp reflex and the tonic neck reflex. These reflexes begin to recede between 2 and 6 months of age, allowing for increasing volitional control. The grasp reflex diminishes at 2 months of age, clearing the way for an increasing ability to voluntarily pick up objects. Voluntary

grasp begins with raking hand movements that emerge at 3 to 4 months of age. By 6 months of age, an infant can reach for and grasp an object (e.g., a toy rattle) and transfer it from hand to hand. Fine pincer grasp of an object between the thumb and forefinger generally develops around 9 to 12 months of age, as exhibited when an infant is able to pick up Cheerios.

The tonic neck reflex, in which turning the newborn's head to one side produces involuntary extension of the limbs on the same side and flexion of the limbs on the opposite side, begins to fade at 4 months of age, giving way to more symmetrical posture and clearing the way for continued gross motor development. The infant begins to show increasing head control at 1 to 2 months, and increased truncal control allows the infant to roll from front to back around 4 months of age. However, in recent years, with infants spending less time on their stomachs (in large part due to the American Academy of Pediatrics recommendations that infants sleep on their backs), the typical development of rolling occurs closer to 6 months of age. The ability to sit without support develops at 6 months. Many infants begin to crawl around 8 months of age and can pull to stand around 9 months. Cruising, walking while holding onto objects (such as coffee tables and chairs), precedes independent walking, which begins around 12 months of age. Major developmental milestones are illustrated in Figure 5-3, the Denver II Developmental Assessment.²⁴

Cognitive Development in Infancy

In the first 2 years of life, the infant's cognitive development follows from the infant's increased capacity to explore both the outside world and his or her own body. According to psychodynamic theories, the infant begins to develop a representation of “self” and “other” as he or she learns from early sensory and motor exploration to differentiate the self from the external world.

In Piaget's theory, described previously, the infant progresses through the sensorimotor stage in the first 2 years of life.⁶ During this time, the infant learns about himself or herself and the external environment through sensory input

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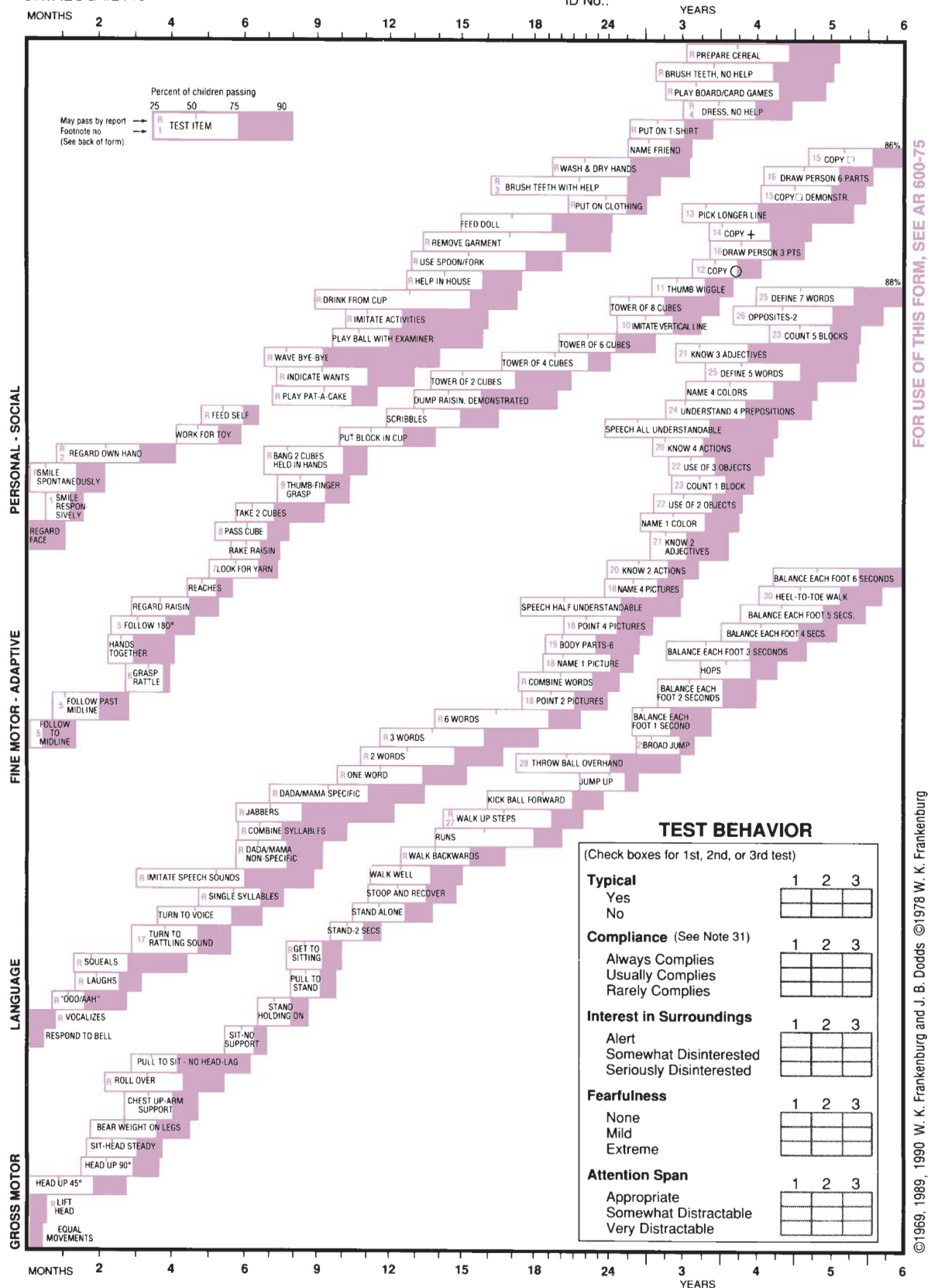


Figure 5-3 The age ranges for some normal developmental milestones in different domains are depicted in this table from the Denver II, a commonly used screening tool for developmental disorders. Items are divided into four categories: personal-social, fine motor-adaptive, language, and gross motor. Each item is depicted by a bar that corresponds to the age range, shown along the top and bottom of the chart, during which 25% to 90% of a normative sample of children is able to successfully complete that item. (© 1969, 1989, 1990 W. K. Frankenburg and J. B. Dodds © 1978 W. K. Frankenburg)

and uses developing motor skills to learn to manipulate the environment. A major milestone during this stage is the development between 9 and 12 months of object permanence, in which the infant gradually realizes that objects continue to exist when they cannot be seen. Before this stage, infants will quickly give up looking for an object that has been dropped if it is not seen. Following the development of object permanence, an infant will look for a toy that had been visible to the infant and is now hidden under a blanket.

Language Development in Infancy

Communication in the first months of life is achieved through nonverbal means. However, the infant is attuned to language at birth. Newborns have been shown to preferentially attend to human voices. There is some evidence that even in utero the fetus shows a stronger response to the mother's voice compared to the voices of other females.²⁵ By 6 months infants can detect phonetic differences in speech sounds that are played to them. At 9 months, infants begin to demonstrate comprehension of individual words. By 13 months, they have a receptive vocabulary of approximately 20 to 100 words.

Expressive language development tends to lag behind receptive language and begins at age 2 months, when the infant first begins to engage in vocalizations, such as cooing. Reciprocal vocal play with the mother encourages these early vocal efforts and facilitates increasing motor control of the vocal apparatus. Infants typically begin babbling at 6 months, repeating speech sounds such as "da da da." The infant's first words are used nonspecifically and often emerge around 10 to 11 months of age. At 12 months, the infant begins to use words such as "Dada" or "Mama" specifically. At 18 months, a child normally uses about 10 to 15 words.

Social and Emotional Development in Infancy

Perhaps the most significant developmental task of the infant with regard to later psychological well-being is that of attachment. The infant plays an active role in this process. The infant's early social behaviors are reflexive in nature, such as imitating the facial expressions of others, which the infant may begin to do by 4 weeks of age. Initially, the infant's smile is spontaneous and unrelated to external stimuli. With time, however, the infant smiles in response to stimuli in the environment (such as the appearance of a parent's face). This response is called the *social smile*. The social smile usually becomes distinguishable from the endogenous smile between 6 and 8 weeks. With time and social interaction with the

parents, the infant smiles in response to a growing number of stimuli (such as a favorite toy).

Beginning around 3 months of age, the infant begins to show clear signs of recognizing the primary caregivers. This begins a process of narrowing the focus of attachment. *Stranger-anxiety*, in which the infant begins to show signs of distress at the approach of a stranger, may begin to emerge around 6 months and is fully present by 9 months of age. Before this, infants have an accepting and even welcoming response to unfamiliar adults. However, the 9-month-old infant generally shows a strong preference for one or both parents, and may cry, stare, or cling to the parent when others attempt to interact with the child, even those who have a close relationship with the child (such as a grandparent). Stranger-anxiety is often more intense when an infant has only one primary caregiver. It usually reaches its peak around 12 to 15 months of age. *Separation-anxiety*, as opposed to stranger-anxiety, is defined as a child's sense of discomfort on separation from the primary caretaker, and occurs when a child is between 10 and 18 months old.

Once a young child's motor skills have developed sufficiently, the child begins to use his or her newfound mobility to explore the environment. In Mahler's theory of separation-individuation, this phase of exploration is called the *practicing subphase*, which corresponds to roughly 10 to 16 months of age.²⁶ Early in this stage, the child experiences a mood of elation as he or she develops a sense of self and his or her abilities. However, these early explorations are characterized by the need to frequently reestablish contact with the mother, which may be achieved physically (by returning to her), visually (by seeking eye contact), or verbally (by calling out to her). This contact with the mother allows the child to regain the sense of security that he or she needs to continue explorations. The degree to which the child seeks out the mother during this phase is variable and dependent on the child's individual temperament.

As the child transitions into toddlerhood, the growing need for autonomy comes into conflict with the need to be soothed by the mother. Mahler described this stage, occurring between 16 and 24 months, as the *rapprochement subphase*. During this stage, the child is thought to become more aware of the possibility of separation from the mother. This generates anxiety that tempers the child's earlier elation and may manifest as increased clinging, whining, temper tantrums, and intense reactions to separation. Mahler theorized that the child's internal representation of the mother at this age is not sufficient to soothe the child. During the *rapprochement crisis*, the child may feel an intense need to be soothed by the mother, but is unable to accept her help. This crisis is resolved as the child builds a more stable internal representation of the mother and with it the ability to achieve gratification in doing things independently.

Many children will identify a *transitional object* to help soothe them during the process of separating from the parents. This frequently occurs around 1 year of age and generally takes the form of a soft object (such as a blanket or stuffed animal) that has some association with the mother. Winnicott hypothesized that such objects provide a physical

reminder of the mother's presence before the child has fully developed an internal representation of the mother and the ability to separate without anxiety.²⁷ Most children will surrender their transitional object by age 5, though there is considerable variability in children's behavior in this area.

Preschool Years (2½ to 5 Years)

The child's first clumsy steps signify more than just a motor milestone. With an increasing ability to physically navigate his or her environment, the child develops a growing sense of autonomy and control, while still looking to the parents to establish the feeling of safety required in order to continue exploring. The child's experimentation in the physical world leads to an increased representational capacity and to symbolic thinking. The child's language skills explode during this time, allowing for fuller engagement in the social world. Through both language and play, the child begins to develop an understanding of his or her own thoughts and feelings, and learns that others have thoughts and feelings distinct from his or her own.

Physical and Motor Development in the Preschool Years

The preschool years are a period of increased physical growth and increasing refinement of motor skills. Children typically grow 2½ to 3 inches per year between ages 2 and 5, reaching half their adult height between 2 and 3 years of age. The toddler's clumsy steps gradually give way to a more fluid and balanced gait. By 2 years of age, most children are able to run and to go up and down stairs on their own. Most children are able to ride a tricycle by age 3, and they can hop on one foot by 3½. By 4 years they can stand on one foot for several seconds, hop fairly easily, and throw a ball overhand. By 5 years, most children can skip. Over this period, fine motor skills gradually develop as well. A child can generally build a tower of 3 or 4 cubes at 18 months, 6 cubes at 2 years, and 10 cubes by 3 years. A 3-year-old child can copy a circle, a 4-year-old can copy a square, and a 5-year-old can usually copy a triangle.

Cognitive Development in the Preschool Years

Cognitive development in the preschool years is characterized by increasing symbolic thought. In Piaget's model, age 2 marks the end of the sensorimotor stage of development and the beginning of the preoperational stage.⁶ During this stage, children show an increase in the use of mental representations in their thinking. They learn to represent an object or idea with a symbol, such as a drawing, a mental image, or a word. The growth of symbolic thinking is evident in the preschooler's increased use of language, imaginary play, and drawing.

The child's thinking in the preschool years is primarily intuitive, rather than logical. Preschool children also demonstrate egocentricity and magical thinking. They see themselves as the center of the world and have difficulty understanding the perspectives of others. For example, they may not understand that when they are pointing to a picture in a book that they are holding (facing themselves), their parent is unable to see the picture. They also blur the distinc-

tion between fantasy and reality, as evidenced by young children's real belief in Santa Claus or in monsters.

Causal relations are also poorly understood at this age. Preschool-age children frequently demonstrate a phenomenalistic understanding of causality, meaning that the child assumes that if two events occur together, then one event must have caused the other. This aspect of preschool children's thinking can be important clinically in understanding how a young child interprets the events in his or her life. For instance, a preschool-age child who has an earache from an infection might believe that he became sick from eating too many cookies, or because he hit his sister. More significant changes, such as divorce or changes in caregivers, can also be attributed to their own thoughts or behavior in a particular blend of egocentrism and magical thinking, which can have more complex psychological sequelae if these misconceptions are not dispelled and guilt alleviated. Other characteristics of magical thinking at this age include *artificialism*, the belief that natural phenomena (such as thunder and lightning) are created by human beings or monsters, and *animism*, the tendency to attribute human characteristics, such as intentions and feelings, to physical objects. A child who trips on a chair leg by accident might, for example, call it a "bad chair."

Language Development in the Preschool Years

Children's language ability explodes during the preschool years. A child's vocabulary typically grows from 10 to 15 words at 18 months to over 50 words by 2 years of age. By age 5, the vocabulary of most children has grown to over 2,000 words. At age 2, the child begins putting two and three words together to form sentences and is able to understand multistep commands and statements. Children's mastery of articulation typically lags behind their vocabulary. For instance, 2-year-olds frequently demonstrate errors of pronunciation (e.g., altering, shortening, or dropping speech sounds, such as "poon" for the word "spoon"). As articulation abilities mature, these errors gradually diminish. By age 4, most children make few of these errors, and their speech is mostly comprehensible to others outside their immediate circle of caregivers.

Language development in the preschool years is highly variable, with a broad range of abilities that could be considered normal. Development is largely influenced by environmental influences, such as the amount of speech to which the child is exposed and the degree to which adults in the child's environment engage the child linguistically using questions, description, and encouragement of the child's efforts toward expressing himself or herself.²⁸

Problems in language development usually occur during this time of rapid acquisition of language.²⁸ Stuttering affects up to 3% of preschool-age children. While this problem usually resolves on its own, prolonged or severe stuttering may require referral to a speech therapist for treatment.²⁹

As the emergence of language allows for greater connection with a child's internal world, the preschool years are often when problems in other realms of development are first detected. Mental retardation, for example, is often detected at age 2 when the child fails to attain language milestones.

Social and Emotional Development in the Preschool Years

The growth of language skills in the preschool years facilitates and is facilitated by a similarly explosive growth in the child's social and emotional development. Language helps organize the child's growing sense of self. The child also uses language and his or her growing mastery of symbolic thought to engage in increasingly creative play. Around age 2 to 3, play emerges as simple mimicry of daily events, such as feeding a baby. Over the next 3 years, the scenarios acted out through play become progressively more sophisticated and creative. For example, a child may progress from simply feeding the baby at age 3, to acting out the preparation of a favorite meal at age 4, to creating an elaborate domestic scene in playing "house" at age 5.

Despite being with other children (e.g., in playgroups or at a playground), play at this age is primarily solitary with minimal social interaction with other children or adults. This is described as *parallel play*: two children sitting next to each other in a pretend kitchen playing with pots and pans, but not interacting with one another. As children get older their play becomes increasingly interactive. Parallel play gives way to *associative play* around 3 years of age, in which play takes place in an increasingly overlapping space through sharing toys but remains a primarily solo endeavor with each child acting out his or her own script. In associative play, two children playing in a pretend kitchen will share the pots and pans, but cook separate meals. For most children, associative play has evolved into *cooperative play*, in which children work together on a task and can take turns with toys, by age 4. Cooperative play is seen when the children playing in the kitchen begin to work together, sharing the pots and pans to create a meal. Cooperative play continues to evolve throughout early childhood into an increasingly structured and interactive activity in which distinct roles are assigned and acted out.

Both play and language allow the child to build an understanding of the behavior and, eventually, the inner lives of those around him or her. Between 2 and 4 years of age, children develop the ability to recognize and to label distinct emotional states, starting with the basic emotions (such as happiness, sadness, or anger). By age 3, most children are able to mimic an appropriate facial expression for these basic feelings. By age 4, most children are able to identify what emotional state would be appropriate for a particular situation. References to feelings and mental states in a child's language increase significantly beginning around age 3.

Theory of mind is a term used to indicate the child's capacity to represent and to reflect on the feelings and mental states of others. Important steps in the development of a child's theory of mind occur between 3½ and 5 years of age. At age 3, the typical child has difficulty understanding that other people have mental states that are distinct from his or her own. This can be demonstrated in a paradigm called the *false-belief task*, described by Wimmer and Perner.³⁰ In this paradigm, the child is presented with a story in which a character has a mistaken belief about the location of an object, and the child is asked to predict where the character will look for that object. To answer correctly on the false-

belief task, a child must be able to assume the perspective of a character in the story. Between ages 3½ and 5, children's performance on this task improves as they are increasingly able to represent the mental states of others and accurately predict behavior on this basis. This capacity to appreciate the perspective of others allows for the development of more complex social interactions, empathy, and cooperation regarding the needs and feelings of others.

Moral Development in the Preschool Years

The preschooler has a black-and-white view of right and wrong, and generally is motivated to follow the rules to avoid punishment. Children at this age strive to be obedient within the context of their own desires, and their behavior is governed by external validation and consequences. They gradually internalize the moral values of their world, and by age 6 have a conscience. These values are shaped by several influences, including praise, consistent parenting, limit setting, identification with parental values, and an increasing capacity for empathy.

Gender Identity

The younger preschooler chooses friends without concern about gender; the younger school-age child may be aware of sexual anatomical differences between boys and girls, but gender segregation among peers has yet to occur. Sex-typed behavior develops gradually, often in concert with the development of the ability to categorize. A child's gender identity, first formed around age 2, becomes more established during early childhood. A 4-year-old child may be able to say what toys or behaviors are "for girls" or "for boys," but it is not until middle childhood that a child will adopt gender-specific behavior (as defined by cultural norms). The preschooler's gender identity is somewhat fluid, which might be reflected in games (such as cross-gender dress-up), or a statement from a young boy that he wants to be a mommy when he grows up.

During the preschool years children often have an interest in their own genitals or in those of others, and they at times engage in sexual exploration, such as playing "doctor." By approximately age 6 this behavior abates, as the child is socialized and learns that in public, sexualized interests and activities are not appropriate. Exhibitionistic or compulsive sexualized behavior in public after age 6 is atypical and may warrant an evaluation.

School-Age Years (5 to 12 Years)

As a child grows from preschool-age to school-age, the developmental challenges become more varied and complex. The child's world expands beyond the primarily home-centered environment to other, more social arenas (such as nursery school and kindergarten), activities such as Cub Scouts or gymnastics, and play dates with peers. The preschooler matures from the egocentric toddler to a young child with the capacity to think logically, to empathize with others, and to exercise self-control. The child's cognitive style gradually evolves from magical thinking to one based more in logic, with an ability to understand cause and effect and to distinguish between fantasy and reality. As a child becomes more

autonomous, peer relationships begin to play an increasingly important role in the young child's social and emotional development. Maturation (including increasing language acquisition, improved motor skills, continued cognitive growth, and the capacity for self-regulation) help equip the preschool-age child for these challenges.

Middle childhood extends from approximately age 7 to the onset of puberty between ages 10 and 12. School-age children are faced with the task of integrating their newly developed and independent sense of self into a world of rules, customs, and order. Their task is more complex, but their skills—predominantly cognitive and social—are also more refined. Children may have uneven development in the following arenas with variations in skill acquisition, and may have expectable transient regressions during developmental or environmental stress or transitions.

Language Development in the School-age Years

By age 7, a child has a basic grasp of grammar and syntax. Unlike the preschool child, whose use of language is primarily based on specific concepts and rules, the school-age child begins to comprehend variations of those rules and various constructions. The child's vocabulary continues to increase, although not as rapidly as during the preschool years. A child in this age-group is able to understand and manipulate semantics and enjoy word play; for example, in the Amelia Bedelia series of books, Amelia throws dirt on the family couch when she is asked to "dust the furniture."³¹ Language becomes an increasingly effective means of self-expression as the school-age child is able to tell a story with a beginning, a middle, and an end. This mastery of language and expression also helps young children modulate affect, as they can more readily understand and explain their frustrations.

Motor Development in the School-age Years

Steady physical growth continues into middle childhood, but at a slower rate than during early childhood. Boys are on average slightly larger than girls until around age 11, when girls are likely to have an earlier pubertal growth spurt.³² It can be a period of uneven growth, and some children may have an awkward appearance; however, for most children of this age there is a relatively low level of concern about their physical appearance (especially for boys.) However, both peers and the media can influence how a child feels about his or her body, and even prepubertal girls can begin to exhibit symptoms of eating disorders and body image distortions. Gross motor skills (such as riding a bicycle) continue to improve and to develop, and by around age 9 these skills do not require specific thought or concentration, but are instead performed with ease. In this age-group mastery of specific athletic skills may emerge and can be seen by peers and family alike as a measure of competence. For the child who is less proficient at these skills, this may be a source of stress or frustration.

Hand-eye coordination and fine motor skills improve during middle childhood, and often by the fourth grade a child has skilled penmanship. During the early elementary school years, children with delayed fine motor skills may

develop academic problems as this may inhibit cursive writing or copying math problems. An evaluation for the child with fine motor delay is indicated, because poor writing or copying skills may reflect an underlying learning disability.

Cognitive Development in the School-age Years

By middle childhood, a child is able to engage in logical thinking, although the child has a limited ability to extend the logic to abstract concepts. Children of this age-group tend to think in the "here and now," with a large accumulation of primarily logical, factual-based learning. They have a limited capacity for abstract or future-oriented thoughts, but they are able to comprehend rules and order.

By age 7, a child thinks more logically and less egocentrically. Gradually, a child develops cognitive flexibility, or the ability to apply learned concepts to new tasks. At this age, a child's cognitions expand because he or she is able to consider and mentally manipulate more than one variable. Piaget described the cognitive stage of middle childhood, from ages 7 to 12, as the period of concrete operations. The child is no longer limited by his or her perception, but can use logic. Children are able to apply reason as well as their own experience when they solve problems, and this is seen in the classroom as well as on the playground; a child at this level can master skills (such as reading, spelling, and mathematics) and can engage in cooperative play, sharing, and team sports.

Cognitive skills are reflected in this age-group in the types of games children play. Preschool children tend to enjoy pretend or fantasy play more than structured games; they have not yet developed the intellectual skills to appreciate logic or strategy. By around age 7, however, children will engage in simple games with more complicated rules that may involve planning, such as Stratego or Guess Who?, while still reveling in the emotional pleasure of beating an opponent or having good luck in a game.

In middle childhood children will develop specific interests, hobbies, and skills. Children often will collect all kinds of objects, from sports cards to dolls to rocks. Hobbies might include making model cars or craft projects (such as sewing). Anna Freud suggested that hobbies are "halfway between work and play," because they involve mental skills (such as categorization or the skill to build an object), yet are also expressions of fantasy.³³

Social and Emotional Development in the School-age Years

The task of social development is more complex for the school-age child. The school setting is more rule-bound, value-laden, and based on routine, and the child has to learn to manage relationships with adult authority figures as well as peers. Beginning at about age 6, the child is able to assimilate others' perspectives and is also learning social cues, rules, and expectations. For example, during a long graduation speech a preschooler might proclaim loudly, "I'm bored!" while an 8-year old might whisper to his mom, "Is this going to be over soon?"

In middle childhood, friendships and relationships with peers take on a larger significance. Children become con-

cerned about the opinions of their classmates, and depend on their peers for companionship, as well as for validation and advice. Close bonds are often developed between same-gender peers, usually based on perceived common interests (which might include living in the same neighborhood). Children tend to pick best friends who share similar values and cultural boundaries; from ages 3 to 13, close friendships increasingly involve children of the same sex, age, ethnicity, and socioeconomic status.³⁴ Further, having a best friend who is not the same age or gender correlates with being rejected or ignored by one's classmates.³⁵

Friendships become more intense and intimate; an 8-year-old will likely describe a small circle of friends, and by age 10, children often have one "best" friend. This is more common in girls but often occurs with boys as well. Boys tend to take on a "pack" or group mentality with a sense of loyalty to the group, whereas girls often develop smaller, more intimate circles of friends and focus on maintaining their inclusion in these groups.

For the school-age child, media influences and popular culture begin to take on considerable significance. These factors can affect peer activities and relationships.

Moral Development in the School-age Years

Kohlberg described children of this age having achieved varying levels of moral development.⁷ Children continue to internalize societal norms, but the fear of punishment or earned reward that motivates the preschooler gives way to hope for approval or positive feedback from adults and peers. Some middle-schoolers adopt an inflexible acceptance of rules of behavior that are to be followed. A school-age child will often become fixated on concepts of right and wrong, and lawfulness; it would be typical, for example, for a 9-year-old child to point out to her carpool driver that she was driving above the speed limit. The middle-school child assimilates the values and norms of his or her parental figures and culture, and the result is a reasonably well-formed superego and conscience. The child gains mastery of cognitive skills (such as considering two variables at one time), and he or she will begin to appreciate other points of view. In games, he or she learns that rules are mutually agreed on and, in special circumstances, can be altered ("Since we only have three people, let's play with four outs instead of three.").

Adolescence (12 to 20 Years)

The physical, cognitive, social, sexual, and moral growth seen during adolescence is rapid and intense. There are generally three stages of adolescence, early (ages 11 to 13), middle (ages 14 to 17), and late (ages 18 to 20), although these age ranges can vary among different children. The physical changes that occur with puberty can have a profound effect on a young person's sense of self and ability to relate to others. Logical thought processes become more elaborate and are integrated with experiences. Teenagers develop the capacity to think abstractly. Peers continue to have a significant impact, and skills (such as decision-making, consideration of other's point of view, and expressing empathy) become more refined. The adolescent is able to appraise himself or herself,

and in part this self-evaluation process leads toward emotional and social independence, and the making of a mature adult.

Physical Development during Adolescence

Puberty is the beginning of adolescence, and physical changes are accompanied by a heightened consciousness about one's body and sexuality. It is a time of drastic physical change. In the United States, puberty begins for girls between ages 8 and 13 years with breast bud development and continues through menarche; for boys it begins around age 14 and is marked by testicular enlargement followed by growth of the penis.³⁶ There are of course variations in these ages, and several factors can affect the timing of puberty and associated stages of growth, including health, weight, nutritional status, and ethnicity. For example, as a group, African American girls enter puberty earliest, followed by Mexican Americans and Caucasians.³⁶

With the onset of puberty for both sexes there are periods of rapid gains in height and weight, and for boys, muscle mass. Similarly, hormonally mediated physical changes include increased sebaceous gland activity that can result in acne. Girls often experience a growth spurt up to 2 years earlier than boys.³⁷ There can be an associated period of clumsiness or awkwardness, because linear limb growth may not be proportional to increased muscle mass. Furthermore, some girls experience the weight gain of puberty as problematic; in one study, 60% of adolescent girls reported that they were trying to lose weight. Physical development does not occur smoothly or at the same rate for all adolescents, and at a time when the desire to "fit in" and be "normal" is paramount, this can be a source of considerable stress.

Other physical changes that occur with early adolescence include an increased need for sleep (on average, teenagers need about 9½ hours of nightly sleep) and a shift in the sleep-wake cycle, such that they tend to stay up later and wake up later.³⁸ Of course, with the demands of school and extracurricular activities, most adolescents do not get the amount of sleep they need. This can result in daytime sleepiness, which can in turn impair motor function and cognitive performance.

By age 15, most adolescents have gone through puberty and have experienced significant changes in their physical appearance. They frequently experiment with clothing or hairstyles, and may spend a significant amount of energy, time, and money on how they look. This emphasis on appearance is part of their search for a stable self. It is developmentally appropriate for a teenager to be self-absorbed at this age and somewhat obsessed with how others perceive him or her.

Late adolescence marks the transition to adulthood, and by this time most teenagers have developed a mostly adult physical appearance. As with earlier stages of adolescence, it is important to note that not all teenagers grow at a similar rate and often in late adolescence "late bloomers" catch up to their peers. Similarly, physical development is not always matched by emotional maturity; an 18-year-old young man is capable of fathering a child, but may not be ready to be a father.

Cognitive Development during Adolescence

In early adolescence, a young person is able to think logically and sometimes make rational decisions and judgments. However, despite taking on a more mature physical appearance, a young teenager is not a “mini-grown-up.” Many children in early adolescence are between Piaget’s stages of concrete operation and formal operational thinking, and they may not exhibit a consistent ability to assimilate information in a reasonable manner or think through the potential consequences of their actions. This often translates into adolescents being able to verbalize the most appropriate action, but many times not be able to make a reasoned decision in the heat of the moment.

By mid-adolescence, most teenagers have developed the capacity for abstract thinking. Piaget termed this stage as *formal operations*, where a person can evaluate and manipulate the data and emotions in his or her environment in a constructive manner, using his or her experience, as well as abstract thought.⁶ The capacity to think abstractly, that is, to be able to consider an idea in a hypothetical, “what if” manner, is the hallmark of formal operations. This skill enables adolescents to navigate more complicated situations and to comprehend more complex ideas.

Despite this improved capacity for problem-solving and an ability to consider multiple possibilities or outcomes, the adolescent does not always make sound decisions. In part because of an incompletely developed prefrontal cortex, tasks associated with executive function (such as planning, prioritizing, and controlling impulses) are not fully mastered. The adolescent may be able to think about the consequences of his or her actions, but he or she is susceptible to a variety of factors (such as emotions, peer pressure, and his or her sense of omnipotence) and as such, is vulnerable toward making poor choices.

Young adults are usually thinking “like a grown-up” and are able to think abstractly, including consideration of the future. They are, in Piagetian terms, in the stage of formal operations. This does not mean they will always consider the consequences of their actions, but most late teenagers begin to formulate ideas about their future in part because they have the capacity to be introspective and reflective. However, maturation of the prefrontal cortex continues to occur into the early twenties and with it comes improved impulse control, analytical skills, and better judgment. This cognitive maturity enables the teenager to manage the transitions that make up this developmental stage, including planning educational or vocational goals and developing more intimate relationships.

Social and Emotional Development during Adolescence

A teenager may have physical and sexual maturity that is not quite matched by his or her cognitive or emotional growth, and this can lead to behaviors that may be perceived as immature. Adolescent behavior is remarkably consistent in its lack of predictability. As the young person searches for an adult identity, there is a mix of conformity with rebellion; an adolescent may experiment with certain behaviors (including drug use or sexual activity) as a means of striving for independence. Risk-taking behaviors and limit-testing increase in

this age-group, as a young teenager learns to establish his or her own boundaries and limitations. This risk-taking enhances the need for external controls (such as clear parental expectations and school rules). Such structure will provide scaffolding for a young person to establish his or her own internal controls.

Peers are a source of support as well as judgment as the teenager establishes an individual identity, and the supportive approval found in the group can influence self-confidence. At this age peers generally are same-gender friends with similar interests, and it is not uncommon for them to spend considerable time together. Social isolation is not the norm for this age, and teens who are “loners” may be more susceptible to mental health issues, such as depression.

Early adolescents compare themselves to their peers, and frequently measure themselves against others their age. There is considerable pressure to conform to the norms of the group, and teenagers will often share similar styles of clothing, haircuts, and interests with their group. This group identification is a means of establishing an identity outside of their family structure and contributes to the developmental task of separation and individuation.

Adolescents gradually expand their world outside the home, to include peers of both genders, as well as adult, nonfamily friends. Their peer group remains an important source of support, and they often engage in school-based activities, clubs, or sports. These settings provide opportunities for the teenager to safely explore a variety of relationships, some of which may develop from a friend to a romantic interest. In high school, teachers and coaches often become important figures in their lives.

While romantic crushes are common during early adolescence, it is likely that dating will begin by middle adolescence. Romantic relationships tend to be short-lived, and last an average of 4 months. Expectations of dating behaviors are mediated by peers, as well as by cultural factors, and parental permission and communication play an important role.

By late adolescence, the security found in group relationships has evolved into finding security as an independent young person. A healthy young adult has less of the group mentality found in mid-adolescence and has more self-reliance and ability to tolerate other styles or point of view. Late teens establish more intimate relationships with friends of both genders; some of these relationships may be sexual and some may be emotionally intimate, and of course some may be both. They are able to separate from their parents or primary caretakers without difficulty and establish a more independent role in their family. However, there may be variation among certain groups of young adults who may have delayed independence based on extended educational pursuits or financial pressures. In some groups, the processes of late adolescence extend well into their twenties, as they search for occupational or personal roles.

Moral Development during Adolescence

An adolescent’s moral principles mirror the primary developmental task of this age, namely, to separate oneself from dependence on caregivers and family. In late childhood, maintaining the rules of the group has become a value; during

adolescence there is a move toward an autonomous moral code that has validity with both authority and the individual's own beliefs of what is right and wrong. Teenagers often "test" their parents' moral code. Role models are important, and while younger children might choose them for their superhuman powers, the early adolescent selects his or her heroes based on realistic and hoped-for ideals, talents, and values.

By mid-adolescence, most teenagers have a fully formed conscience and a well-developed sense of right and wrong. These values help them form a more autonomous sense of morality, where they are able to make moral decisions that are based not just on the rules but more elaborately, on their own beliefs in the context of those rules (see discussion of Kohlberg earlier in this chapter). However, despite the potential capacity for sound reasoning, it is not uncommon for teenagers' normative self-absorption, limited impulse control, and vulnerability to peer pressure to interfere with this ability. It is also important to note that not all adolescents or even adults reach this stage of moral reasoning.

As with all developmental tasks, a young adult's moral development is affected by his or her collective experience, including that with family, peers, teachers, role models, and the community. Late adolescents are able to make decisions autonomously but within a social context, using more refined cognitive skills.

Sexual Development during Adolescence

The young adolescent becomes aware of his or her physical changes and also develops sexual awareness. Most young people in this age-group are not sexually active, but they are sexually curious. The middle-schooler who thought girls were "yucky" now might be interested in watching a couple kissing, or he might be interested in looking at "adult" magazines. Masturbation is common in this age-group, more for boys than for girls, and this behavior should be normalized as much as possible.

Parents and caregivers help a young person develop a healthy sense of sexuality by providing information and opportunities to talk about sexual issues, and by a nonjudgmental attitude about sexual behaviors. Teenagers might rely on each other for information, or they may develop attitudes and observe behaviors based on images from movies or television. These sources may not be completely realistic or accurate; it is important that parents stay in tune and remain involved as a source of guidance.

The task of mid-adolescence is to manage a likely strong sexual drive with peer and cultural expectations. Sexual activity in and of itself is value-neutral and developmentally normal. In several industrialized countries, the age at first sexual intercourse has become increasingly younger over the past two decades. In one study, 45% of high school students acknowledged being sexually active.³⁹ Most mid-adolescents engage in some kind of sexual activity, the extent of which depends on factors including cultural influences and socioeconomic status. For example, black and socioeconomically disadvantaged youth are more likely to be sexually active.⁴⁰

Middle adolescents may not be engaging in sexual intercourse per se, but they are considering issues related to sex and sexual activity. It is important that young persons have a

stable sense of self and be emotionally prepared as they make these considerations. Unstable sexual activity (such as with multiple partners, or while intoxicated) may present a myriad of problems ranging from the risk of unintended pregnancy to sexually transmitted diseases.

In the process of developing a sexual sense of themselves, many teenagers may wonder about their sexual orientation. Sexual identity continues to develop throughout adolescence. For some young people, they are clear that they are heterosexual or homosexual; for others, sexual identity and attraction may be more fluid into adulthood. Many adolescents wonder if they are homosexual, as it is not unusual for adolescent girls to develop crushes on girlfriends or female teachers or for young men to have an erection in the company of other male peers. Some adolescents experiment with same-sex sexual activity, and this may not necessarily mean they are gay. For some, sexual preference will become clearer as they mature.

Adult Development

Young Adulthood

Development does not cease with the end of adolescence. Young adulthood (generally defined as ages 20 to 30) presents challenges and responsibilities, which are not necessarily based on chronological age. Contemporary adult theorists, such as Daniel Levinson and George Vaillant, describe adult growth as periods of transition in response to mastering adult tasks, in contrast to the specific stages used to summarize child development.^{41,42} The transition from adolescence to young adulthood is marked by specific developmental challenges including leaving home, redefining the relationship with one's parents, searching for a satisfying career identity, and sustaining meaningful friendships. This is also a period when a young person develops the capacity to form more intimate relationships and will likely find a life partner.

Growth in the young adult is less a physical phenomenon and more one of a synthesis of physical, cognitive, and emotional maturity. Linear growth is replaced by adaptation and reorganization of processes that are already present. Young adulthood is described by roles and status (such as employment or parenthood), and there are a variety of developmental pathways, which are affected by factors including culture, gender, and historical trends.⁴³ For example, in 1999 in the United States the mean age for mothers at the birth of the first child was 24.8 years and 29.7 years for fathers⁴⁴; in the nineteenth century, it was common for teenagers to run a household and begin to raise a family. The trajectory of young adult growth is as much a function of the environment as continued biological growth.

Cognitive function during this stage is more sophisticated. Characteristics of adult mental processes include a sense of internal control and emotional self-regulation, greater flexibility, improved problem-solving and decision-making abilities, and an improved ability to engage in abstract thinking. Such cognitive traits enable young persons to adapt to and shape the environments that will in turn influence them.

There is significant variability in the transitions for young adults as they complete their high school education. Of Americans between ages 18 and 24, just under 50% are enrolled in secondary education programs or have completed

college. Many young adults move away from their parents' homes as they enter the workforce or college. Such "cutting of the apron strings" can be a stressful period for the young adult, who may have yet to fully establish a stable home or social environment.

There is a period of psychological separation from one's parents that may be marked by ongoing financial or emotional dependence, but gradually young persons will establish their own home and their own community. The young adult's connection with his or her parents, too, will undergo a change from a dependent, parent-child relationship, to one that is more equitable and mutually sustaining. This growth may come full circle as the older parents age and possibly become more dependent on their now full-grown child for caretaking.

The search for a fulfilling career is a significant challenge during this period. The first major decision, such as choosing to enter the workforce or to attend college, is often made in late adolescence. In some societies, such as the United Kingdom, such a decision is often made during school-age years based primarily on intellectual aptitude. At some point during young adulthood, career choices become the primary focus and may contribute to self-esteem and a sense of fulfillment.

Young adults tend to shift their attachment from family and peer groups to a significant other. Intimacy can be sexual, emotional, or both, and young adults are capable of sustaining close interpersonal relationships with members of both genders. A young person's sexual identity is established by this period, and it is refined as the young adult strives to find a relationship that is both emotionally and sexually satisfying. Marriage, and establishing one's own home, is common and further contributes to the shift from young person to adult.

Middle to Late Adulthood

The developmental tasks of the period from ages 30 to 60 (or retirement) include an ongoing integration of one's self with family and community. Continued development of a satisfying career, addressing the needs of one's growing children or aging parents, sustaining healthy relationships, and maintaining responsibility in one's community are characteristics of this period.

While there are no specific physical markers of moving from young adulthood to midlife, this is a period when maturation begins to give way to aging. The human body begins to slow, and how well one functions becomes more sensitive to diet (including substance use), exercise, stress, and rest. This is often a period when chronic health problems become more problematic, or when good health may be threatened

by disease or disability. Bones may lose mass and density (made more complicated by a woman's estrogen loss as she nears menopause), and vertebral compression along with loss of muscle results in a slight loss of height. After age 40, the average person loses approximately 1 cm of height every 10 years.⁴⁵ Responses to this aging process vary from person to person, but experiencing a sense of loss or sadness around these changes is not uncommon.

The physical changes associated with aging are complemented by a cognitive and psychological awareness that life will not last forever. As one approaches later life, the adolescent sense of immortality and omnipotence gives way to a realization that there are limitations to what one might accomplish or achieve. In particular, the death of one's parent often makes one irrefutably aware of one's own mortality. The development of one's own children toward independence can also change one's sense of self and one's role as caregiver and provider. Ongoing relationships, with one's spouse, children, friends, colleagues, in-laws, aging parents, or even grandchildren, are both affirming and fulfilling. Unlike relationships during adolescence or young adulthood, these friendships are not a means of establishing independence or of belonging to a particular group but rather are a means of stable connections.

Late Adulthood and Senescence

The average life expectancy for a person living in the United States is 77.9 years.⁴⁶ By 2030, it is projected that half of all Americans will be over age 65. While it seems counterintuitive to consider "old age" as part of development, there are specific developmental tasks to be achieved. These include accepting physical decline and limitations, adjusting to retirement and possibly a lower income, maintaining interests and activities, and sharing one's wisdom and experiences with families and friends. Another challenge is to accept the idea that one may become increasingly dependent on others, and that death is inevitable.

For many, work is a source of personal and social identity, pleasure, creativity, and profit. When an older person retires or stops working, he or she loses a particular role and has to establish a new identity as a nonworking citizen. This may be a significant loss for some, but for others "life after work" is a period of great relief, freedom, and thriving. A healthy adjustment to this period includes finding stimulation and interest in a variety of activities, ongoing meaningful participation in their own lives and those of their loved ones, and a feeling of generativity in one's life.

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