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Child, Adolescent, and Family Development

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Objectives

After reading this chapter, advanced practice registered nurses will be able to:

1. Understand child and adolescent development within biopsychosocial and environmental contexts.
2. Identify characteristics over the developmental continuum that represent age-appropriate social and emotional behaviors of typically developing children and youth.
3. Determine at-risk behaviors in children and youth across the developmental span requiring referral for additional evaluation.
4. Describe behaviors manifested by children and youth with high secure self-esteem, high insecure self-esteem, and low self-esteem.
5. Compare and contrast models of cognitive development and their application to practice.
6. Demonstrate an understanding of common characteristics of language (phonology, morphology, syntax, semantics, and pragmatics) and language development.
7. Identify normal patterns of family development.
8. Identify social determinants of health that impact normal child development.

Introduction

Knowledge of the characteristics of normal development in typically developing infants, children, and youth is a necessary precursor for recognizing characteristics that are considered atypical for the developmental stage. This knowledge is essential for advanced practice psychiatric and primary care practitioners in nursing who screen and monitor for the early signs of developmental abnormalities, mental illness, or behavioral difficulties. These can be indicative of minor developmental issues or of serious diagnostic conditions such as autism spectrum disorder (ASD) that can be ameliorated, although not cured, with intensive early intervention services. Understanding developmental norms aids in early recognition of mental health disorders such as depression in children and youth (American Academy of Child and Adolescent Psychiatry 2015). To identify these, advanced practice registered nurses (APRNs) must have the knowledge of developmental norms applicable to the children and adolescents they treat.

Early assessment, case finding, and treatment of psychiatric disorders in a youngster may preserve the child's sense of self, competence, and relatedness to others and

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prevent more serious behavioral and relationship issues. The areas of development chosen for review in this chapter reflect the topics discussed throughout this textbook. Descriptions of early brain development and typical social, emotional, and cognitive development spanning childhood to emerging adulthood are presented. In addition, because child, adolescent, and family development are influenced by contextual and interactional factors, Bronfenbrenner's Bioecological Theory of Human Development is used to illustrate the dynamic nature of these interactions and how individuals and families are either propelled or impeded in their developmental trajectory by these factors. More recently, social scientists are examining the impact of social determinants of health (SDH) on overall wellbeing and vulnerability across multiple groups across the lifespan. SDH are external factors such as socio-economic status, neighborhood conditions, health literacy, educational level attained, early childhood experiences, availability, and access to resources among other things. SDH can affect individuals and families where they live, work and or play. Finally, the family is on a developmental trajectory that can complement or conflict with the trajectory of the child or adolescent while influencing individual and or family outcomes. Therefore, family characteristics and dynamics are discussed here.

Prenatal Development

Child development begins at conception with a basic cell and genetic structure. As the understanding of genetics rapidly increases, the model of how an individual's genetics interacts with human development is changing. Going from a fixed model in which human experience takes place within an individual's genetic context, it begins to be clear that the interaction of genetics and experience is much more nuanced than this, and is transactional and bidirectional in nature (Bjorklund and Causey 2017). This interaction is dynamic, with genes being turned on and off, possibly by other genes or by environmental influences. This fluid and dynamic concept of genetic/environmental interaction is changing our view of the developmental issues and problems encountered as practitioners and, ultimately, in the way in which they are treated (Gottesman and Hanson 2005).

Brain Development

The foundation for understanding child and adolescent development begins with knowledge of early and progressive brain development and environmental, chemical, and biological factors that can interfere with normal brain growth. From conception to age 2, brain development, while prolific, is uneven. Early brain development is characterized by several processes, including birth of neurons, neuronal migration, neural pathway development, synaptogenesis, and pruning or shedding of unwanted parts. Brain development begins about 2 weeks after conception and continues into adulthood. While prenatal brain development is largely under genetic control, it is clear that there are early environmental influences here (nutrition, hormones, exposure to toxins). Once the early neural tube is formed, neural proliferation proceeds, followed by migration, then differentiation of cells. Many more cells are formed than are needed, so many cells also die off during this process. The development of synapses then proceeds and follows a similar pattern, with an overproduction of synaptic connections and a later pruning of these connections that proceeds into childhood and adolescence (Tierney and Nelson 2009). This ability to form and prune neuronal connections accounts in part for the great plasticity of young brains. Neuronal and synaptic plasticity in the developing brain is believed to be both adaptive and maladaptive. Adaptive plasticity heralds an ability to learn new skills, store and retrieve information, respond to environmental stimuli, repair damage, and maintain an intact memory. Maladaptive plasticity is implicated in neurological disorders, while excessive synaptic pruning is thought to contribute to psychiatric disorders such as schizophrenia (Belsky and Pluess 2009; Johnston 2009; Marsh et al. 2008).

At approximately 2 years of age, the brain is roughly 75% of the weight of the adult brain (Davies 2011). Myelination, a process that enhances nerve impulse transmission, occurs from a posterior to anterior direction, affecting sensory then motor pathways with enhanced myelination supporting greater intellectual functioning (Marsh et al. 2008). The largest part of the brain, the cerebral cortex, has two hemispheres, right and left, each responsible for different functions. The right hemisphere houses our ability to pay attention, intuition, spatial abilities, negative emotions, ability to process environmental challenges, ability to anticipate consequences, and whole to part processing (Berk 2008; Schutz 2005). The left hemisphere is responsible for positive emotions, oral and written language, analytic processing style, and part to whole processing abilities (Berk 2008). The frontal lobe, where executive function originates, is involved with abstract thinking, motor activity, cognition, consciousness, planned behavior regulation, and impulse inhibition (Berk 2008; Yaun and Keating 2007). The temporal lobe is the communication and emotional sensation center of the brain.

Fetal exposure to in utero toxins, exposure to environmental toxins post birth, anoxic trauma, nutritional deficiencies, and genetic vulnerabilities are some of the factors

affecting normal brain development and the achievement of normal child and adolescent developmental milestones. While the brain is a unique and complex entity, structural or functional deviations in the brain can have profound emotional, social, intellectual, behavioral, or psychological impact on the developing individual both in the immediate and long term.

Debate continues over when neurogenesis ends (Shen 2018; Snyder 2018). For years neuroscientists believed that most neurogenesis ended at about the end of infancy. More recent research has found possible neurogenesis continuing into adulthood in select areas of the brain, but there are conflicting research findings. Adult brains do not have the plasticity of children's brains, but exactly how those changes occur is not clearly understood (Shen 2018). Current thinking is that neurogenesis gradually slows during childhood and then there is a resurgence at adolescence. Synaptogenesis continues throughout the lifetime, with a burst at adolescence. Synaptogenesis and synaptic pruning occur based on a "use it or lose it" criteria. Synaptic connections that are frequently used are preserved and those that are not are eliminated.

During adolescence, the human brain undergoes significant changes impacting several behaviors that are characteristic of this age group. Neuroplasticity or the ongoing maturation of the structural and functional aspects of the central nervous system (CNS) continues to occur during adolescence as part of normal development, in response to personal experiences and post injury to the brain (Ismail et al. 2017). In a review article examining cerebral plasticity, these authors identified five types of neuroplasticity, developmental, adaptive, reactive, excessive/debilitating, and post injury vulnerability, and reiterated that neuroplasticity can be either adaptive or maladaptive. Abnormal or maladaptive plasticity appears associated with neuropsychiatric disorders such as attention deficit hyperactivity disorder (ADHD), ASD, learning and intellectual disabilities, and schizophrenia (Ismail et al. 2017). The loss of plasticity as we mature is not a completely negative phenomenon, as it allows for greater efficiency and specialization within the brain (Bjorklund and Causey 2017).

Arain et al. (2013) describe a surge in synaptogenesis, in part propelled by the synthesis of sex hormones (estrogen, progesterone, and testosterone) during the teen years. This intense activity is secondary to the surge that occurs in infancy. Consequently, adolescents experience significant changes in the limbic system that impacts self-control, emotions, decision-making, and risk-taking behaviors (p. 450). The amygdala, responsible for our emotions, aggression, and impulsivity, seems to be a significant driver of behavior in this age group. Neurotransmitters, the chemical messengers of the brain, also have a role in adolescent behavioral presentation. It appears that during the teen years, dopamine and serotonin levels are lower than at other times and melatonin is higher. Low dopamine levels are implicated in mood swings and emotion regulation. Low serotonin levels are associated with mood, anxiety, and poor impulse control behaviors. An increase in melatonin drives a need for more sleep (Arain et al. 2013). Mills et al. (2014) review research indicating a possible developmental mismatch in the maturation of adolescent brains, the subcortical regions developing first and the prefrontal regions lagging slightly behind. They posit that this could explain some of the sensation-seeking and risk-taking behavior of adolescence.

Since 2015, a large multisite study has been in process looking at adolescent brain cognitive development (ABCD Study, 2016). The study coordinating center is located at the University of California at San Diego and extends to 21 additional sites across the United States. To date, they have enrolled over 11 000 children between the ages of 9 and 10 and will track these participants until they are 20 years old.

Impact of Poverty on Brain Development

As will be discussed further in this chapter, poverty as a social determinant of health is a significant factor impacting brain development. In the United States, it is estimated that one in five children live in poverty. The federal poverty level identifies a family of four with an income of $24 600 as living in poverty (US census.gov n.d.). Poverty renders families more vulnerable to access to healthcare, healthy foods, safe and stable living situations, and resources to support child flourishing and developmental needs. Childhood mental, behavioral, and developmental disorders are more prevalent in lower income families and communities when compared to higher income groups (Cree et al. 2018). Johnson et al. (2016) identified material deprivation, stressors, environmental toxins, and poverty as environmental mediators that also impact the developing brains of children and adolescents. Material deprivation includes factors such as living in food deserts which then impacts nutritional status, and having access to experiences/exposure and supplies, such as developmentally appropriate and challenging toys that provide stimulation and promote learning and critical thinking during key stages of development. Health providers are encouraged to screen for poverty, access to services, and the presence of other SDH factors impacting overall health and development at each child healthcare visit.

Stage Theories and Individual Differences

A review of guides to child development reveals a variety of organizational patterns to assist in understanding how children develop. Development is a very complex subject as humans are complex beings with a long developmental trajectory. Development is usually studied by examining behavior and change over time most commonly broken down into physical, social, emotional, and cognitive areas. Many of these approaches to understanding development use stage theories. Children do have commonalities as they progress through their growing and developing which make this helpful (Mercer 2018), but no stage covers all the aspects of development in a given individual. When trying to understand development, the concept of *individual differences* is imposed upon the generalizations of stage theories and the student of development must always seek to marry these two concepts.

The concept of temperament contributes to our ideas about individual differences, particularly in the area of personality. Early research in the areas of temperament and personality developed separately, but most writers and researchers in the area of development link these two (Kagan and Fox 2006). The concept of temperament describes a set of qualities related to reactivity and self-regulation that appear very early and exhibit some stability over time. While parents have described these individual differences in their children for centuries, and other developmental theories had described aspects of temperament, the first developmentalists to describe them in detail were Thomas and Chess as part of the New York Longitudinal Study in the early 1950s (Thomas et al. 1968). Many others have researched and written about temperament since then and have described temperamental characteristics in various ways, but most include some of these:

1. General activity level (physically active versus quiet).
2. Responsiveness to the environment (how sensitive one is to environmental stimuli).
3. Reactivity in terms of approach or withdrawal to new people or new situations.
4. General mood.
5. Rhythmicity: how rapidly one develops a rhythm or pattern.
6. Persistence: attention span.

Some writers have fewer, some have more (Kagan and Snidman 1991; Rothbart 2007; Thomas et al. 1968). These characteristics are not immutable, but are underlying an individual's reaction to their environment and can greatly affect the fit of the child with a parent (and a parent with a child since we all have these temperamental qualities) and within a family.

Social and Emotional Development

Infancy

The period of infancy is characterized by remarkable strides in social and emotional development. For example, beginning at birth through 4 months of age, the infant's behavior evolves from primarily reflexive behaviors. These include primitive infant reflexes (i.e. Moro and parachute reflexes) and the initial manifestations of voluntary or directed behaviors such as turning the head, brief tracking of an object with the eyes, the "freezing" response to an unfamiliar figure, and the emergence of smiling in response to the recognition of familiar caregiving figures (Betz and Sowden 2008; O'Reilly 2007). As infancy concludes, the attachment to primary caregivers is evident by the infant's observable affectionate behaviors and the early use of language to acknowledge parents/primary caregivers (i.e. mama, dada) (Davies 2011).

The insights pertaining to infant social and emotional development were first proposed by Sigmund Freud (1957), who suggested the infant's primary drive was motivated by need for oral satisfaction that could only be met by the mothering figure. This theoretical perspective was largely disregarded later in the work of Erik Erikson (1950, 1959) and subsequent developmental psychologists such as John Bowlby (1980, 1982) and Mary Ainsworth (1989) (Bretherton 1992). Erikson's framework of psychosocial development conceptualized the period of infancy as the stage of *Trust vs. Mistrust*. Erikson (1950, 1959) theorized that the major developmental task to be achieved by the infant was the development of trust with the primary caregiver. This trusting awareness served as the foundation for the development of subsequent relationships. The infant's trust was the product of the primary caregiver's predictable and consistent cycle of response to the infant's needs for food, comfort, and security. In circumstances wherein the infant's needs were not met in this predictable and consistent fashion, then a sense of mistrust evolved instead, with a potential for long-standing struggles with trusting others.

Building on the earlier work of Erik Erikson, John Bowlby formulated additional insights about the process of attachment. Bowlby's work, relying heavily on ethological concepts, viewed attachment between the infant and mother (his focus was directed to the mothering figure) as predicated on instinctual mechanisms found in the imprinting behaviors of lower level species (Lorenz 1937). According to Bowlby (1980, 1982), attachment, an innate survival behavior and as important as feeding and parturition, was described as a reciprocal process of interactions based upon the infant's need for safety, comfort, and protection, and the mother's caregiving

responses to address these infant needs. Furthermore, Bowlby suggested that disruptions in the attachment process would increase the risk of negatively affecting the child's psychosocial development.

Subsequent studies examining discordant attachment have supported Bowlby's original propositions (Madigan et al. 2007). Bowlby's work created the foundation for subsequent studies of this nascent mother–child relationship. These studies have attempted to describe the attributes, risk (i.e. maternal depression, extended mother–infant separation), and protective factors (i.e. mind-mindedness, maternal sensitivity) associated with adaptive and maladaptive attachment and the child's subsequent psychosocial development (Arnott and Meins 2007; Finger et al. 2009; Laranjo et al. 2008; Niccols 2008; Strathearn et al. 2009).

Mary Ainsworth, a contemporary of Bowlby, contributed to the study of attachment based upon the Strange Situation methodology that she developed and tested to identify three basic patterns of attachment: securely attached, avoidant, and resistant (Ainsworth et al. 1978). Later, another pattern of attachment was added to the original triad: disorganized/disoriented (Main and Solomon 1990). According to Ainsworth, attachment refers to the affectional bond that develops between the mother and infant. Ainsworth (1989) characterized this bond as dependent on a persistent, consistent, and emotionally important caregiver who provided predictable care responses to meet the needs of the infant. Ainsworth's model has since been tested with divergent populations of children (i.e. premature infants, blind infants) and circumstances (i.e. foster care) to enlarge our understanding of the nature of infant and mother attachment (McMahon et al. 2006; Reyna and Pickler 2009; Van Londen et al. 2007). Other models of attachment have since been developed and refined in an effort to reconceptualize the attachment process as reciprocal rather than a unidimensional process between mother and baby (Goulet et al. 1998; Schenk et al. 2005).

Toddlerhood

The sense of trust the infant develops sets the stage for the new psychosocial developmental challenge of toddlerhood: *Autonomy* versus S*hame and Doubt* (Erikson 1950, 1959). It is during this stage that toddlers learn that the cautious excitement and curiosity of exploring, playing, and learning in new environments, such as at daycare centers, are accompanied by unexpected limitations imposed on their behaviors by parents and other adults. The perceived barriers to pursuing these young desires and satisfying their basic needs create immediate feelings of frustration, bursts of temper, and other displays of unrestrained protest. A mantra ascribed to toddlers is that they "are long on will and short on skill" (Malley 1991).

It is during this stage of development that physical abilities advance, enabling the obvious progression in gross and fine motor abilities. These advancements include newly acquired gross motor abilities of walking, running, and jumping together with recent fine motor achievements such as simple stacking of blocks and scribbling shapes. The emerging new motor abilities of the toddler, coupled with advances in cognitive development, enable the child to progress socially with noncustodial adults and other peers (California Department of Education [CDE] 2007).

Through their interactions with adults in their enlarging world, as defined in part by their childcare arrangements, toddlers learn to interact with other adult figures by interpreting their social cues. Toddlers engage in the first efforts of social interactions with their peers. They engage in play activities that begin as parallel efforts and eventually loosely resemble cooperative play with the guided assistance of adults (CDE 2007).

Knowledge of typical toddler development is a prerequisite for increasing understanding of this stage of childhood for research, clinical, and parenting purposes. It enables researchers to investigate the behavioral symptomatology and impact associated with chronic conditions and disabilities (Gray and McCormick 2005; Magiati et al. 2007; Peadon et al. 2009). Knowledge of typical development facilitates APRNs' abilities to screen and detect the early manifestations of delays for service referrals (Individuals with Disabilities Education Improvement Act of 2004). Additionally, understanding of typical social and emotional development enables APNs to suggest to parents age-appropriate activities to foster the acquisition of domain-specific milestones.

Preschool Years

The preschool years extend from 3 to 6 years of age. Erikson (1950, 1959) referred to this period of childhood psychosocial development as *Initiative vs. Guilt*. One of the developmental challenges for the preschool child is to begin to learn how to integrate comparisons of his or her efforts that do not correspond to the same level of achievement by his peers. The preschooler's play increasingly evolves with the refinement and development of gross and fine motor skills, enabling more active participation in collective play with peers and evidence of preferred play interests. The preschool child learns to play more cooperatively with peers and is more aware of and sensitive to what are fair and unfair actions toward playmates (Betz and Sowden 2008). Children's play takes on more dramatic overtones, with adaptation of the adult roles of their parents or authority figures into their

play and the incorporation of fantasy themes for acting out with their peers.

Knowledge and understanding of the typical psychosocial behaviors expected of preschool children are necessary to properly monitor, screen, and detect behaviors indicative of an actual or potential problem, and for parental guidance regarding their child's development (Hagan et al. 2008). It is during the preschool years that the child begins to move away from an egocentric orientation. The stages of play shown in Table 1.1. illustrate play

Table 1.1 Stages of play

Infancy	Solitary or independent play: infant's play is focused on activities that are dependent on reflexive and sensory actions. Playthings that engage the infant by stimulating sensory motor behaviors are favored. These playthings include: • rattles • mobiles • toys that make sounds • colorful toys • toys that can be mouthed • bodily movements that create pleasurable sensations (i.e. sucking fingers, patting at mobile) • responding to parental bonding and attachment behaviors
Toddler	Toddler play expands beyond the infant's body boundaries. The toddler's developing fine and gross motor abilities enable greater exploration of the environment and manipulation of playthings. The toddler's developing language skills and cognitive skills enable parallel play activities, that is, play that is done in the presence of other children but does not involve other children. • Scribbling and coloring • Riding tricycles • Stacking and nesting toys • Playing with stuffed animals • Playing with dolls • Completing simple, large-sized puzzles
Preschooler	The preschooler is developing social skills that enable the child to move beyond parallel play to play that involves the beginning of interacting with others. The child's developing cognitive abilities result in the emergence of fantasy play involving the adoption of imaginary roles such as storybook characters. Individual interests and preferences in play activities develop. • Playing with pretend toys such as costumes • Playing simple board games • Dancing • Playing with musical toys • Playing with high-tech toys (i.e. video games, movies) • Using wheel toys • Playing group games • Playing fantasy role-playing games • Gender-specific activities are not always evident
School age	School-age children progress in the refinement of gross and fine motor skills associated with play. Their developing social network of classmates and friends provides the context for learning prosocial skills, learning to play by the rules, and making comparisons regarding their competencies in sports activities with their peers. Competitive sports activities emerge and flourish. Individual interests and preferences in play activities continue. • Team sports • Creative hobbies • Crafts • Video and computer games • Board games

Table 1.1 (*cont'd*)

	• Construction activities (making models, art objects, decorative items) • Outdoor sports (swimming, hiking, bicycling) • Special-interest clubs • Technology recreational activities (use of the Internet)
Adolescent	While team sports are focused on gender-specific activities, development of opposite-sex activities can include dancing, music, clubs, and community advocacy/social justice activities. • Competitive team sports (i.e. football, baseball, volleyball, etc.) • Competitive individual sports (i.e. track and field, tennis) • Pleasure reading • Creative hobbies (i.e. drawing) • Collection hobbies (i.e. baseball cards) • Group outings • Technology recreational activities (i.e. surfing the Internet) • Computer games • Outdoor sports (i.e. hiking, swimming)

Source: Cincinnati Children's Hospital Medical Center (2007–2009), Keith (2009), National Parent-Teacher Association (2009), Ramseyer (2007).

activities that the child engages in based on developmental mastery, which also serves to reinforce developmental skills.

School-age Years

Erickson hypothesized that the psychosocial task of the school-age period (7–11 years), entitled *Industry vs. Inferiority*, is the learning and mastery of competencies associated with the child's expanding role expectations. During this stage, the child adopts the role of student, is delegated simple household responsibilities (i.e. making his bed and keeping his bedroom/sleeping area orderly), and engages in sports and recreational activities as a team member or competitor, whether formalized with Little League baseball or soccer teams, or loosely organized with groups of peers (Betz and Sowden 2008). The child's challenge is to achieve proficiency with new skills and knowledge to meet the expectations as a student, team member, and member of a peer group. Failure to do so leads to feelings of inferiority, low self-esteem, social isolation, and depression (Erikson 1950, 1959). Investigating the impact of learning and behavior problems on typical psychosocial development in school-age children has been the focus of research interests. Researchers have also studied the impact of chronic illnesses and disabilities on this school-age developmental domain for the purpose of preventing and ameliorating this psychosocial comorbidity (Grey and Sullivan-Bolyai 1999; Koenning et al. 1995; Sullivan-Bolyai et al. 2003; Woodgate and Degner 2003).

Adolescence

By adolescence, the major psychosocial task of youth is to establish an identity. This identity represents the compilation and integration of intellectual, social, psychological, and physical domains of functioning that the youth has acquired and achieved during the preceding stages of development (Erikson 1950, 1959). In turn, this development has been influenced and shaped by family membership, the social network of peers and adults, and the child- and youth-oriented community (i.e. school, youth groups, etc.).

The youth's developing identity is shaped in part by the company of peers he/she keeps. If the youth has developed an integrated identity without painful and potentially destructive unresolved conflicts from the past, then peers will be chosen who reflect the current psychological and emotional status and future aspirations of the teen. If the conflicts and ensuing intrapersonal and psychosocial turmoil are not resolved appropriately, the adolescent is at risk for associating with other teens who engage in self-destructive, delinquent, and even criminal behavior (Erikson 1950, 1959).

Although teens may espouse the beliefs and values of wanting independence, in truth many seek first and foremost the acceptance of their peers, as evidenced by their conformity in dress styles, physical appearance, colloquial expressions, and recreational and social interests (Bricker et al. 2009; Cin et al. 2009; Santor et al. 2000). Peer-related activities are fortified in their importance by the collective formal and informal group activities that

serve to create a group identity, as is found with sports teams, celebrity-worship cults, and recreational interest groups.

For the first time, serious romantic relationships, some of which are based on physical attraction, develop (Nemours Foundation 2008a,b). Formerly, in past generations, these relationships were not seriously entertained until middle to late adolescence. In today's society, younger adolescents engage in sexual relationships as evidenced by the lowering of the age of introduction to sexual intimacy (Abma et al. 2004; Guttmacher Institute 2006). Yet, despite changing trends in adolescence pertaining to earlier initiation of active sexual behavior, the rate of adolescent pregnancy has dropped, due in part to the use of contraceptive options, including delaying sexual intercourse (Guttmacher Institute 2006). Another interesting development is the trend of young adults to delay marriage, childbearing, and entry into the workforce until the late 20s. Formerly, the mean age for these developmental milestones of adulthood occurred earlier in the 20s (Arnett 2000, 2001).

As societal and demographic trends change both nationally and globally, the characteristics associated with social and emotional development as well as all domains of development will be altered and revisited by developmental experts. Astute APRNs in psychiatric and primary pediatric care settings will observe these shifting developmental paradigms in adolescents and respond in their typical clinical expert manner based on the evidence to determine what behaviors represent at-risk or actual concerns that need additional assessment and services.

This section has discussed the social and emotional development of children and youth across the lifespan. Characteristics associated with each developmental stage have been presented to illustrate the age-appropriate behaviors reflective of social emotional behaviors of typically developing children and youth. Knowledge of typical development is a foundation of the knowledge needed to screen, detect, and refer for services those children and youth who require additional evaluation.

Self-esteem

Self-esteem refers to an individual's perception of personal self-worth and it is a mutable view of self whose roots of development begin early in childhood (Rosenberg 1965). A child's self-esteem, as measured by tools such as the Rosenberg Self-Esteem Scale (1965) or the Coopersmith Self-Esteem Inventory (Coopersmith 1981), can be quantified on a continuum from high to low. High levels of self-esteem have been further conceptualized as high secure self-esteem and high insecure self-esteem.

Self-esteem has been described by Robins and Trzesniewski (2005) as having its own developmental trajectory when examining groups of children and adults. Young children are described as having relatively high self-esteem, which declines over the course of childhood and continues to decline in adolescence with a resurgence in adulthood. Children may have a high value of themselves because they have relatively little for comparison. As children have more social experiences in school and develop cognitively, they are able to compare themselves to others and lose the global positive self-regard. This continues into adolescence as adolescents are often highly self-critical and also critical of each other. These are general trends upon which individual experiences are overlaid.

Children who have high self-esteem are confident of their abilities to perform, whereas children with low self-esteem experience hesitancy and doubt about their competencies to function on a par with their peers or as expected by their parents and other responsible adults in their lives. Children with high secure self-esteem perform academically better in school and in athletics, engage in less risky behaviors, are healthier, have more effective coping skills, and are more socially competent (Biro et al. 2006). There are some children with ADHD whose high self-esteem is typified as insecure and who are as at risk for problematic behaviors as children with low self-esteem (Menon et al. 2007). Those who have insecure self-esteem are described as inauthentic with feelings of entitlement narcissism. Children with high insecure self-esteem are particularly sensitive to criticism and react angrily to those who are perceived as criticizing them. They engage in high-risk behavior such as aggression and substance abuse but justify their behavior as appropriate (Menon et al. 2007). In contrast, children with low self-esteem more frequently experience school failure, engage in antisocial, aggressive, and delinquent behaviors, and exhibit more health and mental health problems (Donnellan et al. 2005).

A child's self-esteem can be influenced negatively or positively by maturational, social, and environmental factors. The self-esteem of a child can be adversely affected amid periods of significant changes such as during pubertal growth, transition periods associated with enrollment in new schools (such as progressing from elementary to middle school), and the developmental challenges experienced during adolescence (Adler and Stewart 2008; Biro et al. 2006). Increased levels of anxiety and poor or awkward social skills are additional factors that can contribute to low self-esteem. Researchers have been interested in studying self-esteem in children because it has been associated with adaptive and nonadaptive behaviors and alterable behavioral outcomes.

Additionally, experts have recognized that self-esteem, a perceptual evaluation of our self-worth, is amenable to modification with the use of intervention strategies.

Understanding of self-esteem has evolved from estimates of global self-worth to its association with specific areas of functioning as it pertains to family, school, and peers. For example, researchers found that home and school areas of self-esteem were more strongly associated with teen drug use than was peer self-esteem (Donnelly et al. 2008). Findings from this and other studies suggest that interventions targeting specific aspects of self-esteem may be more effective when the goal is global improvement of self-esteem (Donnelly et al. 2008; Wilkinson 2004; Young et al. 2004).

A number of variables are associated with supporting higher levels of self-esteem. Family and parent variables associated with promoting higher self-esteem in children are secure family attachment, parental acceptance of the child, high parental self-esteem, and intact family structure (Adler and Stewart 2008; Dalgas-Pelish 2006; Donnelly et al. 2008; Edmondson et al. n.d.). The profile of characteristics associated with high self-esteem in children includes productive school participation, protective peer activities, resiliency, and self-perceived physical attractiveness (Adler and Stewart 2008; Donnelly et al. 2008; Edmondson et al. n.d.; Manning 2007; Veselska et al. 2009). Researchers have differed in their explanations of the factors that promote positive levels of self-esteem in children. For example, some argue that achievement outcomes are not the determining factors of self-esteem, but rather the consequence (Menon et al. 2007). That is, children who experience success with academics will, in turn, experience positive feelings about themselves.

The risk factors and consequences associated with low self-esteem have been examined as well. Associations have been reported between maternal and adolescent low self-esteem (Edmondson et al. n.d.). Peer activities may create the medium for at-risk behaviors (Veselska et al. 2009). That is, children and youth may feel encouraged to engage in at-risk activities such as substance abuse if that is an acceptable norm of the peer group (Donnelly et al. 2008). Gender differences have been reported in the behavioral manifestation of low self-esteem. Boys with low esteem exhibit more externalizing behaviors compared to girls with low self-esteem, who have the tendency to internalize problems (Veselska et al. 2009). Lower self-esteem in adolescents was associated with a number of at-risk behaviors including early sexual initiation, unprotected sex, teen substance abuse, and a history of risky partners (i.e. history of AIDS, HIV, and incarceration) in adolescent girls (Ethier et al. 2006). Although self-esteem can serve as a protective factor for at-risk health behaviors, a child who has low self-esteem is at risk for developing psychosocial and psychiatric problems such as social isolation, aggression, and delinquency (Veselska et al. 2009).

Self-esteem in children and youth warrants consideration by APRNs in clinical practice. While it is unlikely that self-esteem would be formally assessed in clinical settings, it is appropriate to acknowledge its importance in determining the extent to which children and youth perceive their self-worth. Those who share feelings and/or demonstrate behaviors indicative of low self-esteem or high insecure self-esteem as described here should be referred for additional evaluations and services.

Cognitive Development

Understanding how cognitive development proceeds in children and being able to judge where a given child is on this timeline are important knowledge and skills for all pediatric healthcare providers. The understanding of aberrations or deviations from the "usual," "common," or "normal" pattern of development is, of course, firmly rooted in having developed an accurate understanding of normative patterns. Cognitive development is particularly challenging because so much of it is either unseen or inferred from a child's actions, language, or other indicators. Despite this, an understanding of how our current knowledge of human cognition developed and how children of various ages are both alike and different will assist readers in increasing knowledge about and skills with children.

Theoretical Considerations

Current developmental theory in the area of cognition is the product of a synthesis of thinking that began in the early part of the twentieth century. Interest in child development in the United States evolved largely out of the child study movement, based in observational studies of child behavior. The development of theory began with the work of Arnold Gesell (1929), who based his descriptions of children's behavior on a theory of maturational unfolding. This unfolding resulted from innate abilities, a genetic template. For Gesell, the environment played a superficial or temporary role in influencing the unfolding of behaviors. While his theory would be regarded as overly simplistic today, what Gesell gave us was a template of development that formed the basis for future work in the field of human development.

Behaviorism developed in contrast to both Gesell's idea of maturationalism and Freud's theories of the mental mechanism, examining so carefully the function of the psyche. For behaviorists, the only important functions of the human organism were those that could be seen and recorded, and these behaviors operated in clear

response to certain fundamental rules (Watson 1913). Behaviorist theory reduces cognitive development to learning behaviors without regard for the internal processes that might enable one to learn.

Beginning his writing in the 1920s, Swiss psychologist Jean Piaget (1952) was the most dominant influence on a school of cognitive development commonly referred to as Constructivism. Piaget went largely undiscovered in the United States until the 1950s. His work was the basis for the study of cognitive development versus learning described by the behaviorists. Piaget's work revolves around the idea that individuals "construct" their own understanding of the world around them, organizing and reorganizing the structure of their knowledge. Piaget saw the cognitive structure as a product of the continuous interaction of children's internal abilities and the world around them. Inherent in this thinking is the idea that we all attempt to create a meaning for the world around us and are constantly revising and remaking our interpretations or "schemas." This process takes place by way of the functions of assimilation or accommodation. We take in or assimilate things in our environment that match our internal schema or accommodate our internal schema if the reality does not match our schema.

Best known among Piaget's work are his major stages of development and their characteristics:

1. Sensorimotor period (birth to 2 years). Infants progress from being largely reflex beings to learning to associate their experiences with the outside world through the coordination of sensory input and motor functions. They begin to represent objects mentally and manipulate them.
2. Preoperational thought (ages 2–7). Children in this stage are still primarily dependent upon perception and have little developed logic. They begin to represent the world with words, ideas, and drawings. The period is characterized by egocentric speech and thought, with children unable to appreciate another's point of view.
3. Concrete operations (ages 7–11). Logical thinking replaces intuition and children can perform basic logical operations on concrete objects and perform limited manipulation of mental objects. Piaget's classic tests for this period involved understanding reversibility and conservation.
4. Formal operations (ages 11–15). Individuals begin to think in more abstract ways. They understand hypothetical thinking, multiple causation, and other abstract concepts (Piaget 1952).

Piaget's work with children, largely observational, had a profound impact on the development of modern cognitive psychology. His documentation of how cognition develops and the stages of development is what most who have a passing acquaintance with Piaget remember. Newer research suggests that his stages often underestimated the capabilities of children; however, what endures are his constructivist ideas about how individuals attempt to attach meaning to the external world and how the quality and form of thinking change over time.

Piaget largely ignored the influence of the context within which cognitive development occurred, but the Soviet psychologist Lev Vygotsky (1962) emphasized the importance of the social and cultural environment while maintaining a constructivist approach. He placed great emphasis on the importance of language and social interaction in cognitive development. Education for Vygotsky was a major tool in development, and the function of the adult as "teacher" was to assist the child in learning through the relational interactions. This then contributed to the overall development of the child. His idea of the Zone of Proximal Development proposed that adults as "teachers" provide supports or "scaffolding" for children, enabling them to grow from their basic capabilities to a higher level (Figure 1.1).

A newer approach to the study of cognition is the information processing approach. In some ways an information processing approach is a return to a more reductionistic view of cognitive development, in contrast to the constructivist views which are much more holistic and include the concept of metacognition (Kuhn 1984). Information processing theory compares the functioning of the human mind to a computer model.

Cognitive processes are thus reduced to a list of tasks processed using mechanisms of attention, encoding, representation, execution, decoding, and memory (Bjorklund and Causey 2017). Development is largely a growth in capacity, efficiency, or speed of processing in the individual. Information is taken in through the senses, encoded into electrochemical impulses, and stored in areas of short-term or working and/or long-term memory.

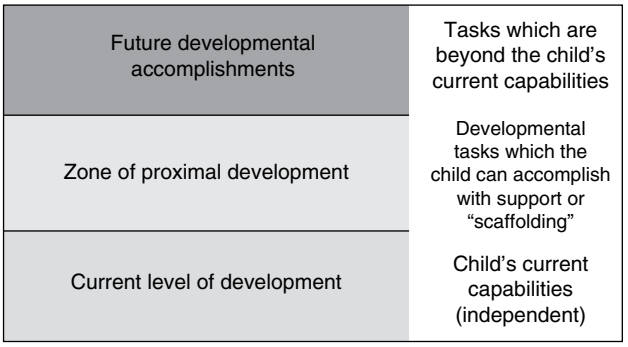

Figure 1.1 Vygotsky's Zone of Proximal Development.

Behavior is the result of processing of information by comparison to previous encoded experiences, arriving at a conclusion, and executing a decision via motor output (Figure 1.2).

Information processing theory has been helpful in clarifying some of the relationships between cognitive processes to physiologic mechanisms and states. It is also particularly useful in explaining and understanding some of the learning problems that develop in individuals and explaining where the usual methods of processing might have gone awry.

More recent developments in cognitive developmental theory include revisions of some of Piaget's classic ideas by the neo-Piagetians. Among these is Robbie Case, who relabeled and attempted to more accurately define some of Piaget's stages. Case (1996, p. 2) described the work of neo-Piagetian cognitive theorists in the following passage:

> Theorists began to assert that children's conceptual development was less dependent on the emergence of general logical structures than Piaget has suggested and more dependent on the acquisition of insights or skills that are domain, task, and context specific.

In current thinking, the emergence of cognitive skills is more dependent on social interaction as described by Vygotsky (1962). Neo-Piagetian thinking also includes the idea that the general stages as described by Piaget are more of a "ceiling" or age-linked constraint. Within those constraints, children develop in unique ways more dependent upon their surroundings and interactions. Neo-Piagetian thinking has also included the idea that changes occurring in children's thinking are less general than originally described by Piaget. Instead, they are more specific or "modular", with children showing growth in cognition in a more piecemeal fashion, first in one area or domain and then in another (Goswami 2008). Although Piaget's ideas have seen modification in recent years, there has been no overarching theory to replace the scope of Piaget's ideas. Bjorklund (2018) argues that developmental biology will have an increasing influence on cognitive development theory, as we learn more about brain development and its profound influence on the development of cognition.

Infant Cognition

If there has been any area in which the capabilities of children have been underestimated over the years, it is in the area of infant development. This is a clearly understandable phenomenon because infants have little in the way of language and motor skills to assist us in our assessment. The testing of infants is considerably more complex and requires some very clever experimental designs.

Infants are born predisposed to social interaction and constantly take in and process the world around them from the moment of birth. Infants are equipped with a set of primitive reflexes to assist them with their initial interactions with their environment, but these are rapidly replaced with reactions based on their developing awareness of the world around them. The sources of their information are their bodies and the senses. Infants, although physically immature, have intact sensory systems. Newborns can see, but have a short focal distance, likely the equivalent of someone quite nearsighted. They prefer

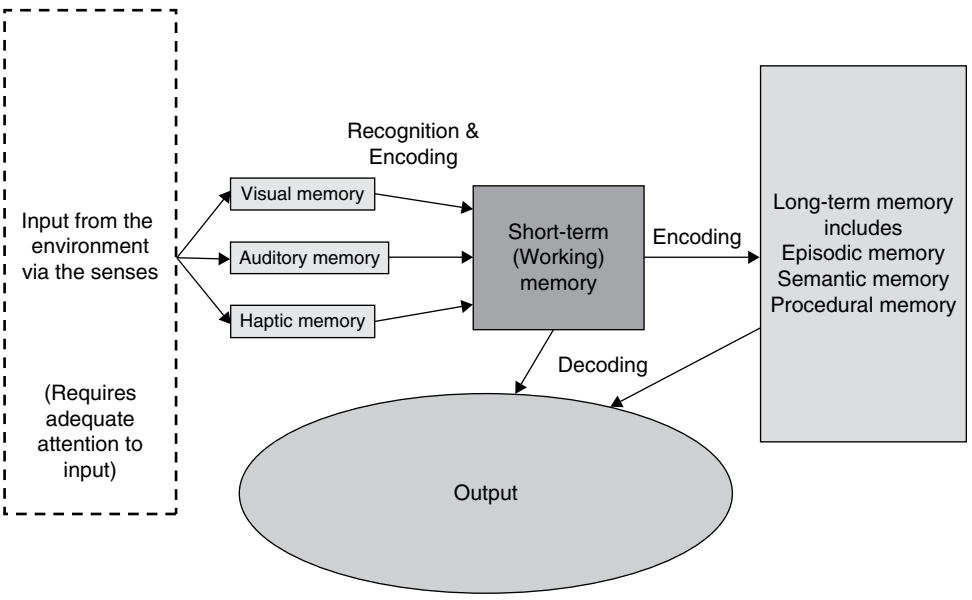

Figure 1.2 Information processing concepts. (*Source:* Developed by Stephanie Wright.)

high contrast and often scan to those areas of the human face. By 2 months of age, the eye has matured sufficiently so that the infant can focus about as well as an adult (McDonough 1999). Depth perception, which requires the brain's coordination of two visual images, first appears around 6–11 months of age and appears to be closely related to crawling (Trawick-Smith 2010).

Touch is a crucial sense for newborns and they are well equipped to use this sense to interact with those caring for them. Newborns also have a well-developed sense of pain. Newborns can distinguish basic tastes and will show this with facial responses. Smell is also well developed in newborns. Hearing is not terribly acute in newborns, likely related to delayed clearing of materials from the ear canal. However, their hearing capabilities are quite sensitive shortly after birth (Trawick-Smith 2010).

Piaget's Sensorimotor Stage describes infants as inadvertently discovering new experiences through their sensual exploration and then trying to repeat those events or actions. This progresses to anticipation of events from cues, and then attempts to repeat interesting events through their own actions. This eventually leads to some goal-directed behavior and some simple problem solving toward the end of the first year of life. Piaget emphasized the importance of the development of object permanence in infants, recognizing that objects exist out of sight. Piaget claimed this appeared at about 8–12 months of age, but current laboratory research indicates that this may appear much earlier, although it is not obvious in everyday events (Goswami 2008). Imitation emerges early in infancy and is likely a primary source of learning for infants. Older infants engage in imitation of complex behaviors of others.

Piaget suggested that infants do not mentally represent their everyday experience until about 18 months of age. Current research largely refutes this, with infant research into memory showing that much younger infants remember events, and later imitate or repeat actions and therefore must have mental representation of them (McDonough 1999). Toward the end of the first year, infants show simple problem solving, such as flipping a light switch to turn on a light, and rapidly progress to problem solving that requires multiple steps.

By the second year, toddlers have well-developed object permanence, searching in multiple locations for objects. They develop excellent skills of deferred imitation of complex behaviors of others. They can actively sort objects.

While we now know that infants have the development of certain cognitive skills earlier than described by Piaget, there is still considerable discussion describing the actual capabilities of infants. Infant development is an area of ongoing rich research.

Early Childhood Cognitive Development

Piaget characterized the Preoperational Stage of development more by what children could not yet do than by what they could do. According to Piaget, the greatest change seen in this age group was the great capacity for mental representation (symbolic function), which permitted young children to separate the physical world from the world of thought. Their play then takes on the characteristics seen so commonly in children of this age: engagement in considerable make-believe and greater complexity in their play. Make-believe play serves a variety of functions for the child, including allowing them to express emotion, anticipate events, and become more socially competent. Children of this age also develop considerable fine motor coordination and use this to represent their ideas. Piaget pointed out several limitations of thought in children of this age. They engage in egocentric thinking, being unable to consider any other point of view or interpretation of the world than their own. Recent research questions this. Gelman and Schatz (1978) point out that young children adapt their language to their audience, at times showing clear appreciation for another's perspective. Several redesigns of Piaget's classic three mountains experiment have shown awareness of others' points of vantage during this preschool (preoperational) period (Borke 1975).

Piaget also held that there were certain limitations of logic for preoperational children. The famous conservation experiments show difficulties of children appreciating the constancy of certain physical characteristics such as volume in the face of changes in appearance (the changing appearance of liquids of the same volume in different containers). Piaget felt this was related to centration, the tendency of preschool children to focus on one characteristic of a situation or object, while ignoring others. As with age-related limitations described by Piaget, preschoolers can overcome appearances and think more logically than he originally described, especially when the materials are familiar to them (Goswami 2008).

Similarly, preschool children appear to be able to categorize with more sophistication than originally described by Piaget. In conclusion, preschool children gradually learn about relationships that involve interpreting appearances of objects, and this understanding is aided by their growing language abilities and their beginning to understand constancy of number. Like infants, preschoolers are considerably more capable than originally described by Piaget, but the steps they must pass through to achieve these milestones were accurately described by him.

Cognition in School-Age Children

Piaget (1952) described the school-age period as characterized by concrete operational thought, with thought

becoming more logical and well organized. Children of this age understand concepts of conservation and reversibility, and they grow to be able to perform classifications based on multiple characteristics of the items to be sorted. They can sort according to dimensions and can solve basic inferential problems. They understand spatial relationships and orient themselves in space. This allows them to learn basic directions from one place to another and to draw maps.

The limitation of concrete operations described by Piaget is that the logic of school-age children is limited to what they perceive in the real world around them. They have difficulty considering abstract ideas and thinking about larger principles that might govern the real world.

School and culture heavily influence the growth of cognition in this age group, therefore the achievement of the milestones of concrete operational thinking and the progression to formal operational thinking depend heavily upon the context within which the child grows. Some school-age children show the beginnings of hypothetical thinking and deductive reasoning before Piaget's usual age for formal operational thinking (approximately 11 years), but this greatly depends upon their environment (Goswami 2008).

Adolescent Cognitive Development

At about age 10 or 11, children begin to enter a period of formal operational thinking, according to Piaget. In this stage they develop the ability to think abstractly, going beyond the realm of their everyday experiences. Adolescents develop clear deductive reasoning, allowing them to solve problems based on logic and mental experimentation. The development of language is closely tied to this ability to perform abstract reasoning. Adolescents can consider problems that are counter to their everyday experience and engage in hypothetical thinking about possible outcomes.

Elkind (1967) described limitations on the newly developing cognitive skills of adolescents imposed by their dramatic changes in self-concept. This creates a kind of self-absorption, a new form of egocentrism, which tends to limit some areas of cognitive growth. While Elkind described four characteristics of adolescent egocentrism, his concepts should be examined for applicability within specific cultural contexts. His characteristics include:

Imaginary audience: Adolescents often believe that they are the center of others' attention, creating extreme self-consciousness and making them sensitive to criticism.

Personal fable: Adolescents, because they feel they are the center of others' attention, often feel that they are somehow unique and special, acting out extraordinary lives.

Invulnerability: Because they feel that they are somehow unique, adolescents may feel that are invulnerable to the usual consequences of everyday actions. Their ability to consider the long-term consequences of their actions may be severely limited by their egocentrism.

Idealism: Because they are able to go beyond the limits of reality and into the possible by their cognitive capabilities, adolescents may tend to be very idealistic and become quite critical of others who do not reach these ideals, parents in particular.

Recent research indicates that formal operational thinking is not always attained in all cultures and contexts, indicating that it is educationally and culturally transmitted. In addition, formal operational thinking does not emerge in all areas of thinking at once, but rather appears in relation to specific areas of learning (Keating 2004).

Development and Information Processing Theory

As previously described, information processing theory ascribes the changes in cognition that occur as children grow in terms of growth in processing speed, ability to attend, short- and long-term memory, and organization of thinking. There are few age-related milestones to assist one in tying particular milestones to age. Older children have progressively faster processing speeds and are able to sustain selective attention for longer periods. Short-term memory, that is, retention of information for less than a minute without active memory retention strategies, is usually tested with digit span. Two- to 3-year-olds can usually retain about two digits, 7-year-olds about five digits. This gradually increases to an adult level of about seven to eight digits. Changes in long-term memory may be more related to organization than to capacity, and children's abilities to retrieve information from long-term memory improve with age and with practice. Once children are in formal learning situations, they have many opportunities for improving memory and often learn organization and rehearsal strategies for improving memory (Santrock 2007).

Development of Coping in Children

Responses to stress and imposed change have been extensively studied in adults. Physiologic and psychological response patterns to stress are well documented, but how those patterns develop is still unclear. Coping is defined to include all responses to stressful events. Most stress researchers would consider coping as falling into two categories: instinctive or reflexive reactions and those that are learned responses (Compas 1987). In adult coping

literature, there has been much research on coping as an adaptational response as evidenced by studies of coping function and style. As classically described by Lazarus and Folkman (1984), coping functions to both regulate the individual's emotional response and engage in some problem solving around the crisis imposed by the stressor.

Individual variability in coping and the description of coping styles by various researchers (Krohne and Rogner 1982; Miller and Green 1984) lead to the question of how these patterns are developed in individuals and which individual differences and environmental issues play an important part in the development of these patterns. Included in these studies of individual differences is the question of why some children are more resilient and less vulnerable to stress than others (Garmezy 1981).

While coping literature has built upon adult studies of stress psychology, it has important overlaps with traditional areas of child development research, including neurobiology, temperament, cognition, attention, emotion, and parental attachment. Because coping is such a complex phenomenon, no central theory has emerged, but several important principles have been reiterated related to the development of coping in children.

Early coping is embedded in neurobiology and the development of the brain and CNS. Early responses to stress seem to be particularly rooted in the temperamental characteristics related to arousal, reactions to novelty, attention, and affect (Rueda and Rothbart 2009). As the child matures, experience contributes to the development or limiting of coping skills, with different aspects of development playing more important roles at various ages. Early experiences with stress may in turn shape the development of the brain regions related to emotional regulation (Compas 2009). Early experiences with uncontrollable stress have been associated with changes in the serotonin neurons and a pattern of learned helplessness (Maier and Watkins 2005).

Parents are central figures in the child's development of coping skills, serving as important social support, role models for coping behaviors, and stress-absorbing figures. Parents can make demands on children that are early stressors that children must deal with. How parents support children in coping with their demands is an important variable. The availability and ability of parents to assist children in gaining a sense of control over the demands placed upon them help children develop a sense of mastery and control.

> The development of adaptive coping requires years of deep developmentally attuned interpersonal support for dealing with just-manageable demands. Stressful overarching social conditions, such as poverty, oppression, discrimination, harsh families and parenting, maltreatment, and neglect, pose serious risks to the healthy development of coping.
>
> (Zimmer-Gembeck and Skinner 2016, p. 3)

Age-graded shifts in coping have been described by Skinner and Zimmer-Gembeck (2007) and serve as a helpful developmental model for coping (Table 1.2). Within the first few months of life, infants progress from largely physiologic and temperamentally based reactions to learning self-soothing and use of distraction as early coping mechanisms. Children learn to regulate their own behavior with a shift occurring at about 18–24 months of

Table 1.2 Broad outlines of possible developmental shifts in means of coping

Developmental period	Approximate ages	Nature of coping	Role of social partners	Nature of regulation
Infancy	Birth to 18 months	From reflexes to coordinated action schema	Carrying out coping actions based on infant's expressed intentions	Interpersonal co-regulation
Preschool age	Ages 2–5	Coping using voluntary direct actions	Availability for direct help and participation	Intrapersonal self-regulation
Middle childhood	Ages 6–8	Coping using cognitive means	Cooperating with and supporting child's coping efforts	Coordinated self-regulation
Early adolescence	Ages 10–2	Coping using metacognitive means	Reminder coping	Proactive self-regulation
Middle adolescence	Ages 14–16	Coping based on personal values	Backup coping	Identified self-regulation
Latef adolescence	Ages 18–22	Coping based on long-term goals	Monitoring coping	Integrated self-regulation

Source: Reprinted from Skinner and Zimmer-Gembeck (2007) with permission from the Annual Review of Psychology. Permission conveyed through Copyright Clearance Center, Inc.

age, as mastery of motor skills and emotion come into play. A second major shift occurs at about 5–7 years of age, when cognitive elements and social relations begin to play important parts in coping. A third shift is described at about age 10–12, marked by changes in patterns of thinking correlated with the growth of more sophisticated cognitive skills represented by formal operational thinking. At 14–16 years of age, autonomy and identity development begin to play salient roles in coping. New patterns again emerge between middle adolescence and the early 20s, when expanding social horizons provide challenging new experiences.

Acute and chronic stresses have been implicated in many physical and mental health problems in both children and adults. Documentation of patterns of coping in children has been a fairly recent field of research and one that will be extremely important as healthcare professionals attempt to understand and better treat the emotional and mental health problems of children as well as understand the behavior of all children.

Language Development

The exact reasons for humans' ability to communicate that is unrivaled by any other species are unclear. Piaget believed that language development was an extension of the intellectual development of humans; we speak because of superior intelligence. Noam Chomsky (1972), on the other hand, argued that humans are prewired for language and have a theoretical "language acquisition device." Regardless of which view is espoused, language development is a critical indicator of normal human development and delays or failure to develop language are an important sign that some pathology exists.

Language is a symbolic form of communication, spoken, written, or, in some cases, signed. Spoken communication can be further broken down into receptive language and expressive language, with expressive language being much easier to assess in children. Although there are many languages in the world, they all have common characteristics, described as phonology, morphology, syntax, semantics, and pragmatics.

Phonology describes the basic sounds of the language. Although there are many similar sounds in languages, there are sounds that are unique to some language structures. Research by Patricia Kuhl (1993) has shown that infants are capable of hearing all possible sounds for the first six months of life, but during the second half of the first year, infants improve their ability to recognize sounds in their own language and gradually lose the ability to hear sounds that do not occur in their native language. This is a prime example of synaptic pruning as neural pathways that are unused are eliminated.

We are more aware of infants developing an understanding of the morphology of language,; that is, learning to recognize the meaning of sounds. During the second half of the first year, infants begin to recognize the boundaries between words in spoken language and to attach meaning to words. By 12 or 13 months, infants recognize about 50 words (Menyuk et al. 1995), many more than they are capable of expressing. This pattern continues with receptive language exceeding expressive language for much of early childhood.

All children, regardless of the language spoken, generally follow a similar pattern of development of expressive language:

- All infants are capable of crying to signal distress and often have distinctive cries as signals for different states.
- Cooing predominantly refers to vowel sounds made by young infants, usually indicating a pleasurable state, but it is also seen in response to an interaction with another.
- Sometime around four to six months, infants begin adding consonant sounds and vocalize consonant–vowel combinations, called babbling.
- Later in infancy, these sounds are strung together and often have the intonation of human speech.

While this is occurring in infancy, infants are learning to communicate in other ways as well, often using gestures and head nods to communicate their wishes. Deaf children at this age often begin learning to sign (Bloom 1998). Signing has also been promoted for hearing children as a method for enhancing their ability to communicate while they are developing spoken language. Daniels (1994) has found that teaching hearing children sign language instruction had a number of benefits, including increased vocabulary among preschoolers. Other small studies have suggested that teaching a version of signing to preverbal infants may enhance communication between parent(s) and child (Thompson et al. 2007) and possibly reduce frustration in preverbal children.

Most children utter their first word sometime between 10 and 15 months of age, usually names of important people, animals, or common objects. While the acquisition of first words is gradual, most children experience a real spurt in growth of vocabulary between 15 and 24 months and achieve a vocabulary of about 50 words (Hoff 2014). During this period, young children often acquire multiple new words each day, a truly amazing feat of learning.

Most children begin to string words together in two-word phrases during the second year, and two-word phrases are expected in normal development by 24 months of age. These two-word phrases often have a characteristic commonly referred to as "telegraphic

speech" in which children convey meaning with a very succinct use of words. Thus, a combination of two words expresses the desire to do or have something despite the absence of important nouns, articles, or verbs, such as "Bobby ice cream" to indicate that he wants ice cream or, alternately, that someone else is eating ice cream. Context is important in understanding telegraphic speech.

Children move rapidly from two-word sentences to more complex and longer structures between 2 and 3 years of age. During the entire preschool period, children develop further understanding of the morphology, syntax, semantics, and pragmatics of language. This includes understanding plural and possessive forms, correct word order in sentences, the meaning of sentences, and appropriate use of language in different contexts. Although children make many errors as they attempt to apply language rules, this is part of learning the complex rules of language. By the time children enter 1st grade, they have an extensive expressive vocabulary, estimated at more than 8000 words (Rubin 2006). During elementary school, children refine their grammar and continue a remarkable growth in vocabulary.

Environment influences language development in a number of important ways. Parental and caregiver response to the child in conversation has been shown to be critical in numerous studies. This begins with what is usually referred to as child-directed speech. Adults and older children around a young child alter their speech pattern for the young child, often reducing the number of syllables in words and the number of words in a sentence and changing the pitch of the speech (child-directed speech). This has the important function of capturing the child's attention. Labeling familiar objects for the child serves to expand their vocabulary. In addition, parents and caregivers often use repeating language as reinforcement, recasting something the child said, emphasizing a word, which may include correcting and expanding on what the child said (Hoff 2014). Infants whose mothers speak to them more often have been shown to have larger vocabularies (Huttenlocher et al. 1991). Likewise, adults who read to children and later have their children read to them encourage language development.

The influence of genetic factors on speech and language development has not been clear. Recent findings of several genes related to dyslexia have also found that one of these genes (KIAA0319 on chromosome 6) may be related to speech delay (Rice et al. 2009). Other genes identified related to speech and language disorders include the FOXP2 gene on chromosome 7, which is related to apraxia in children (Medline Plus (n.d.).). These findings simply reinforce the need to identify and treat speech and language disorders early in life, when neuroplasticity gives children the best outcomes from treatment.

While there is considerable variation in early language milestones, such as the first spoken word, the basic pattern of language learning applies to all children and to all spoken languages. Understanding this basic pattern assists practitioners in knowing when to seek help for children and their families. Emphasizing to parents their important role in language development, the APRN can give them specific suggestions on ways to encourage their child's language development. These include reading to and talking with the child, singing songs to the child while emphasizing particular words or expressions, and providing age-appropriate explanations and descriptions of events.

Bronfenbrenner's Bioecological Theory of Human Development

As stated previously, child, adolescent, and family development is complex and occurs within environmental contexts in which multiple interactions transpire directly or indirectly, affecting the developing individual. In the 1970s, Bronfenbrenner developed and described the Ecology of Human Development Theory (1979). The original theory was composed of the microsystem, mesosystem, exosystem, and macrosystem. He later added the chronosystem. In 1994 he revised his theory and renamed it the Bioecological Theory of Human Development (Bronfenbrenner). Table 1.3 provides concepts from his original model, his evolved thinking, and additions to the model on human development.

The development of each individual is interdependent on multiple factors, genetics, experience, temperament, type, and nature of reciprocal relationships, evolving complexity of interactions, context, time, attachments, quality of environments, and the emotional health of all individuals. A thorough nursing assessment of children, adolescents, and families must pay attention to all of these elements and understand how they affect the growth and development of each family member.

Family Life Cycle Development

As individuals grow and develop, so too does the family in which they are nested. There is no one definition of a family; however, most would agree that a family is how the individuals involved define it and is composed of both biological and nonbiological individuals as determined by the "family" unit. The Committee on the Science of Research on Families of the Institute of Medicine and the National Research Council further described families as, "members with very different

Table 1.3 Bronfenbrenner's evolving model of human development

Ecological Theory of Human Development: Original (individuals and settings)	Bioecological Theory of Human Development: Additional factors operating with original theoretical model
Microsystem: Individual, family, peers, school, and neighborhood; roles; where the individual lives; individual is an active actor in own development	Experience: Subjective feelings that are positive or negative; emotional and motivational in nature
Mesosystem: Connections and relationships between microsystem elements.	Proximal processes: Progressively complex and reciprocal interactions; the higher the levels of positive interactions between the parent/caretaker and the child, the lower the behavioral problems in the child
Exosystem: Connections and relationships between two or more systems, at least one of which does not contain the individual but can indirectly impact processes impacting the individual	Process-person-context-time: Characteristics of the developing person, the environment, changes over time, and developmental outcomes as a result of all interactions
Macrosystem: Customs, culture, ethnicity, beliefs, social fabric impacting the individual	Exposure: Multiple and complex activities must occur over time to promote emotional, social, moral, and intellectual development
Chronosystem: Change over time affecting the individual and the various environments the person experiences	Mutual emotional attachment: Such attachment with parent/caretaker that is internalized motivates child to engage with others
	"Third party": Children growing in environments where they are exposed to more than one caretaker have a greater variety of complex experiences that enriches development
	Future perspective: Psychological development (positive or negative) of caretakers influenced by behavior and development of the child

Source: Bronfenbrenner (1979), Bronfenbrenner (1994), Bronfenbrenner and Ceci (1994), Bronfenbrenner (2005).

perspectives, needs, obligations, and resources. The characteristics of individual family members change over time – within life spans, and across generations. Families exist in a broader economic, social, and cultural context that itself changes over time" (Olson 2011, p. 7).

Contemporary family constellations are influenced by divorce, single parenting, remarriages, older parents, foster and adoptive status, lesbian, gay, bisexual, transgender, and questioning parenting, economics, culture, mores, immigration status, co-parenting, and blended and geographic locations, among other factors (Olson 2011; Wright and Leahey 2013). Regardless of the family structure, family tasks include supporting the development of all its members, socialization, protection, providing food and shelter, communication, transmitting values, beliefs, and cultural norms, role development, and assisting with problem solving.

Two well-known family development models are Duvall (1977) and McGoldrick and Carter (2003). Both models identify developmental stages that families go through over time. Adolescence, adulthood, launching (young adult leaving the nuclear family to live on his own or with a partner), marriage, addition of children (through birth, fostering, or adoption), midlife, and later life are specific times with specific characteristics that comprise the development of the family. While both models provide the APRN with a foundation for understanding family development, families are increasingly viewed as dynamic, with new configurations and processes that no longer fit into known traditional models. When conducting assessment of the child or adolescent, it is important to understand the factors that the family unit is dealing with because those factors and others beyond the immediate family unit impact the developing child or adolescent.

Positive parent–child relationship and connectedness can serve as a protective factor during child and adolescent development (Viner et al. 2012). APRNs can promote prevention in their practice with families and their children. Preventive efforts include positive behavioral modeling, maintaining a well-child healthcare routine, recommending early childhood programs such as Head Start and Montessori, and home-visiting programs. In addition, stressing with parents the importance of education and attending school and after-school enrichment programs, reducing screen time, reading routinely to the child, and engaging in community events and activities are ways for them to foster learning, stimulation, and connectedness. Educating parents about the importance of their role as teacher, advocate, and protector in their child's development and increasing their health literacy related to normal child and adolescent

development and needs will facilitate their understanding of the importance of remaining engaged with their child through presence and active listening (Cprek et al. 2015; Garner et al. 2017; National Academies of Medicine 2016; Simmons et al. 2017; Viner et al. 2012).

Impact of Social Determinants of Health on Child, Adolescent, and Family Development

Discussion of SDH has been part of the social science literature since the early 2000s when Sir Michael Marmot started publishing on health inequalities (2001), subsequently on SDH (2006), and chaired the World Health Organization (WHO) Commission on the Social Determinants of Health. Since 2012, there has been a proliferation of research and published papers on SDH and, by extension, social determinants of mental health (SDMH), looking at the impact of these factors on brain and overall development, relatedness and health/mental health (Allen et al. 2014; Hartman et al. 2017; Li et al. 2017; Viner et al. 2012; WHO and Calouste Gulbenkian Foundation 2014). SDH is defined as "conditions in the environments in which people are born, live, learn, work, play, worship, and age that (in turn) affect a wide range of health, functioning, and quality-of-life outcomes and risks" (Office of Disease Prevention and Health Promotion, 2020). In addition to genetics, SDMH are associated with social inequalities, experiences during critical developmental periods, and environmental factors. Compton and Shim (2015) identified the following factors as influencing mental health status, "social exclusion, adverse early life experiences, poor education, unemployment/underemployment/job insecurity, poverty, income inequality, neighborhood deprivation, poor access to health foods, poor housing quality and instability, adverse features of the built environment and poor access to health care" (p. 421). Additional factors include exposure to violence, residing in a conflict laden or active war zone, exposure to pollutants, dirty water or poor air quality, and gender-based or sexual-orientation-based inequities, among others.

SDH are modifiable factors that will require policy, enforcement, and intentional action across multiple areas impacting people throughout the lifespan course. To ensure opportunity to access factors supporting healthy development for all, healthcare providers, including APRNs, should first assess vulnerabilities and refer to appropriate resources. In addition, APRNs can serve as advocates for strong policies promoting healthy development efforts and for equitable access to resources. The Protocol for Responding to and Assessing Patients' Assets, Risks, and Experiences (PRAPARE) tool is a screening measure for providers to assist them in gathering data from individuals and families on the SDH factors that may be impeding their health and overall functioning (2016). An Implementation and Action Tool Kit exists along with the screening tool. APRNs are encouraged to review and use the tool as an aide to assist in gathering information about a range of factors impacting children, adolescents, and families, including family income, veteran status of parents, access to transportation, stress, neighborhood conditions, housing, education, language preference, parental employment, material security, social support and social integration, domestic violence, safety, immigrant/refugee status, and parental incarceration history. One very promising program that is being used nationally to assist vulnerable groups with burdensome SDH factors is medical-legal partnerships. These are collaborative practices between clinics, communities, and academic institutions working together to assist community members tackle problems related to housing, healthcare access, legal difficulties, public benefits, and education challenges (Henize et al. 2015).

Assessment Tools

1. The American Academy of Pediatrics Policy Statement on *Identifying Infants and Young Children with Developmental Disorders in the Medical Home: An Algorithm for Developmental Surveillance and Screening* (2006), the American Academy of Child and Adolescent Psychiatry *Practice Parameter for the Assessment of the Family* (2007), and the adapted Calgary Family Assessment Model (CFAM) by Wright and Leahey (2013) are useful documents for both the primary care and child and adolescent APN to use when assessing child, adolescent, and family development.
2. Developmental surveillance is a longitudinal process whereby at each visit the provider assesses and documents the status of the child and family to determine developmental concerns, progress, individual or family risk or protective factors, educational needs, and the effectiveness of prior health promotion or therapeutic regimen recommendations. Historical data,; observation of the child, adolescent, and caretaker(s) alone or during interactions, family structure, functioning, adaptability, and stressors, cultural, gender, and ethnic information, and communication style are specific data that can be gathered using these tools.
3. CFAM looks at three aspects of the family: structural (internal, external, and context), developmental, and functional (instrumental and expressive). Structural

characteristics include gender, ethnicity, class, family composition, and boundaries. Developmental characteristics include stages of family members, tasks performed by family members, and attachments. Functional characteristics include communication, roles, problem solving abilities, power, and beliefs (Wright and Leahey 2013).

4. Hagan et al. Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents, 4th edn (2017). Bright Futures is a series of resources for health supervision in primary care settings. It includes a pocket book, tool and resource kits with screening tools, and a nutrition guide.

Summary

This chapter has provided a focused overview of social, emotional, and cognitive development in children and youth as a basis for understanding age-appropriate and typical behaviors. Major theories of development have been reviewed and discussed in the context of understanding children's individual differences and the importance of social determinants of heath. Bronfenbrenner's Bioecological Theory of Human Development, Family Development Theories, and SDH data remind us that children and adolescents grow in multiple contexts which impact their developmental trajectory. Emphasis was directed to presenting content on the developmental characteristics relevant to clinical understanding for the purposes of screening at-risk and problematic behavior requiring additional evaluation and services. To this end, subject matter on cognitive and social emotional development, self-esteem, coping, and language development was presented. Incorporated within the discussion of these developmental characteristics are the theoretical underpinnings and evidence that support these models of development.

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