NORMAL DEVELOPMENT

INFANCY, CHILDHOOD AND ADOLESCENCE

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Watoto Wema boys enjoying a game in Kenya
(Photo: Dennis Machio-Michezo Afrika)

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A 15-year-old girl starts throwing nightly tantrums if she doesn't get desert after dinner. Her mother is justifiably concerned and seeks the help of a mental health professional. Yet when her three-year-old son does the same thing, she sends him to his room, convinced this is a passing phase he will outgrow in due time. The mother probably is right—the same behavior has very different meanings for toddlers and teenagers. Without a working knowledge of *normal development* the same mother might send the three-year-old to a therapist or the teenager to her room.

For parents, this knowledge comes from multiple sources including experience, friends, cultural traditions, magazines and books, support networks, and more recently electronic sources such as websites and chat rooms. Parents also rely on guidance counselors, social workers, therapists, and physicians to help them understand typical and atypical behaviors. Yet health professionals often are more versed in the language of abnormality and psychopathology than in the language of normal growth and development. For example, the Diagnostic and Statistical Manual for Mental Disorders (DSM-IV-TR) and the International Statistical Classification of Diseases and Related Health Problems (ICD), provide clinicians with a compendium of criteria and categories for aberrant psychological development. However, these systems provide little information about normal development, which is not simply the absence or opposite of psychopathology.

The purpose of this chapter is to give a brief overview of normal child development, defined as average or "on-time" growth based on the attainment of specific physical, cognitive, linguistic, social-emotional, and behavioral milestones across specific stages. A focus on normal development suggests what is likely based on population averages, with clear historical, cultural, and international variations to be expected. A foundational understanding of average development can be useful to practitioners in many ways, from assisting clinicians in history taking or planning diagnostic work at intake to augmenting case conceptualization and the selection of developmentally-appropriate treatments (Holmbeck et al, 2010).

This chapter begins with a review of key developmental principles or themes, including nature versus nurture, developmental timing and plasticity, critical and sensitive periods, and the role of culture and context. Following this brief introductory section, age-specific milestones in cognitive, linguistic, social-emotional, and behavioral development from infancy through adolescence are reviewed. Although it is also important to understand normative milestones in the area of physical development, this typically is covered in medical and health publications and is beyond the scope of this chapter.

UNDERSTANDING NORMAL DEVELOPMENT

Several recurring developmental principles or themes are important to keep in mind when defining normal development and identifying growth processes and milestones.

Nature versus nurture: the origins of development

There has been a long history of debate about the influence of nature versus nurture on development, often referred to as the "nature-nurture debate." Are we born a certain way or does our behavior depend on how we are raised? A focus on *nature* highlights the role of genes and biology in predetermining developmental

outcomes from conception onward. In contrast, a focus on *nurture* emphasizes the role of life experiences across different contexts including the family, school, peer group, community, and culture.

Recent advances in behavior genetics have provided compelling evidence for the *relative* contributions of both nature and nurture. In light of these scientific advances, few current theories of development embody an either/or position in this debate, but emphasize the interplay of both over time (Berk, 2006). Stated simply, a key issue is not *whether* development is due to nature or nurture, but *how much* and *how* each contributes to outcomes across multiple characteristics and domains. Rather than consider nature *versus* nurture, it is more accurate to consider both nature *and* nurture and how they interact (Plomin et al, 1995).

The empirical evidence on the relative contribution of nature and nurture comes largely from family, twin, and adoption studies, as well as from more recent DNA analyses. Much of the research on the genetic roots of behavior has focused on disorders or problem behaviors, including mental retardation, schizophrenia, autism, alcoholism, aggression, and criminality. A strong relation between biology and development has been found for chromosomal and single-gene disorders such as Trisomy 21 (Down's Syndrome). The genetic contribution for disorders involving multiple genes is more complex to determine with estimates varying widely across studies. For example, heritability estimates for alcoholism have been found ranging from 0.32 to 0.98, depending on symptoms (McGue, 1994). In any case, the influence of environmental factors such as parenting styles, socioeconomic status, and neighborhood characteristics on mental illness, behavioral disorders, and other individual differences looms large (Meier et al, 2008; Turkheimer et al, 2003; Tuvblad et al, 2006).

What do we know about the role of nature and nurture in children's normal development? Much of this work has focused on two areas: temperament and intelligence. Studies of infants and young children have examined temperamental characteristics such as reactivity, mood, shyness, sociability, emotionality, attention/persistence, and adaptability. Because temperament is defined as stable and early appearing individual differences in behavioral tendencies, it is presumed to have strong biological roots. Clearly identifiable and enduring patterns of behavior such as shyness have been observed in very young infants, suggesting children are born with these tendencies. Twin studies generally confirm this genetic contribution, with heritability estimates ranging from 0.20 to 0.60 (Saudino, 2005). Intelligence also has a high heritability factor, typically estimated to be about 0.50 (Plomin et al, 1995); however, this may vary according to environmental differences like socioeconomic status (Turkheimer et al, 2003).

But findings for both temperament and intelligence also mean that much of what differentiates individuals is *not* accounted for by a child's biological birth certificate. Some of these environmental influences vary between contexts. For instance, communities vary in terms of resources and families differ in terms of typical parenting practices. However, it is also important to remember that environmental influences within a given setting may be non-shared. For example, parents may treat their children differently within the same family—this is called the "non-shared environment."

As mental health professionals consider the extent of their child clients' normal or atypical development, it is important to recognize this complex interplay of nature and nurture and how this contributes to the clients' clinical presentations.

Additionally, educating youths' primary caregivers about the biological and environmental influences on development may dispel the misconception that children are products of *either* nature *or* nurture in isolation. A boy who is "just like his father" may have been born with some genetic similarities, but he also is equally likely to be modeling his father's behavior based on what he sees at home and elsewhere.

Developmental timing and plasticity

A second overarching theme within the developmental literature is the sequencing and variation within normative development. A *continuous* view of development holds that humans grow and change through a gradual process, growing at a relatively even pace and acquiring more complex cognitive, linguistic, social-emotional, and behavioral skills in a linear fashion as they age, much like gradually climbing a hill. *Discontinuous* theories conceptualize development in a stage-specific pattern, where individuals experience rapid change when transitioning from stage to stage, but experience relatively little change during one developmental period, much like climbing stairs.

Just as the nature versus nurture debate shifted towards a nature *and* nurture perspective, theories of development have increasingly blended continuous and discontinuous models of development. The end result is that development is seen as a dynamic process that can be characterized as both continuous and discontinuous in its pattern and rate of change. Accordingly, normal child development occurs on a continuum, ranging from children whose physical, cognitive, social-emotional, and behavioral development may lag behind those of their peers, to children who are precocious, meeting or surpassing developmental milestones before most children their age. Even still, a majority of children who develop slightly earlier or later than their peers may do so within a "normal" timeframe.

As opposed to either maintaining a steady developmental pace or maturing through a rapid series of developmental "bursts," children demonstrate considerable

Imitation: a quick way of acquiring skills

heterogeneity in their rate of development. Such variation occurs within and between different developmental domains, with varying rates of development in cognitive versus social-emotional domains, for example, as well as across different periods of youth development, such as in toddlerhood versus adolescence (Holmbeck et al, 2010). Whereas one child may demonstrate advanced linguistic development during toddlerhood, he or she may lag behind some children in developing motor coordination at this time. During adolescence, this same child could have verbal abilities that are commensurate with peers, while also demonstrating highly advanced motor coordination compared to others.

It is useful to keep in mind that, barring early mental or physical disorders, lapses in development and deviations from the norm at different points in time are not necessarily predictive of subsequent developmental deficits or delays. Instead, children typically continue to grow and change. Traits or skills can be altered throughout the lifespan although they typically are more malleable earlier in development. This notion of *plasticity* is an important characteristic of normal child development.

Critical and sensitive periods

One of the most famous cases in the developmental literature is about a child named Genie who was locked in a closet until she was discovered by authorities at age 13. Although Genie was the subject of intensive intervention, she was never able to regain normal cognitive, physical or social skills. Studies of Genie and other *feral children,* individuals who have lived isolated from human contact from an early age, have yielded important information about *critical periods* for normal development. A critical period is a limited time that begins and ends abruptly during which a specific function develops. If the conditions for development are not available during that time, it may be extremely difficult or even impossible to develop these functions later in life. For example, the first five years of life are a particularly critical period for language acquisition. The early years are also critical for the development of vision—studies of babies born with cataracts left unrepaired have found that they do not develop normal vision even if cataracts are removed later in life.

Critical period

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Sensitive period

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A *sensitive period* is a time when it is easiest for children to acquire certain skills. It is similar to a critical period in that it is a time of optimal development, but it is best understood as a time of maximum sensitivity that begins and ends more gradually and is more amenable to recovery. For example, second language learning is easier before age 6, but not impossible at any age (although most older learners do not speak with a native accent). The difference between critical and sensitive periods has also been the subject of much debate, particularly in the area of language. It is sometimes blurred, particularly because critical periods have been defined as times when individuals are most "sensitive" to stimuli. Critical and sensitive periods are best understood as optimal "windows of opportunity" and are important for encouraging positive developmental outcomes that are most likely (and possibly can only occur) during certain ages.

The role of culture and context

Normal development can only be understood within the context and culture where it occurs. These factors can influence normal development and may promote or hinder it. Thus, another important principle of normal development

is that average population rates for on- or off-time development may vary considerably within and across racial/ethnic and cultural groups. They may also vary according to other contextual differences including historical era, community, or socioeconomic status. For example, during the colonial period in the US, parents considered babies crawling to be something abnormal and to be avoided at all costs. Doctors at that time even recommended that parents tie their children to a cradle to prevent crawling as this movement was thought to be reflective of animal and not human behavior. Now, most American parents are delighted when they see their children beginning to crawl and try to encourage it.

The nature and timing of some capabilities is less likely to vary across context, particularly in physical and cognitive domains. Skills and behaviors—such as cooing and babbling, initiation of speech, or the ability to use abstract reasoning—develop in a more species-specific pattern; they are all capabilities that are unlikely to differ cross-culturally. For example, children in India, China, Sweden, and Peru all are likely to begin to talk during the second year of life, although cultural practices may encourage or discourage the precise timing of language development. Similarly, if a child grows up in a culture that does not encourage abstract thinking, although this potential develops during adolescence, it may never translate to actual behavior.

This means that normal development must always be understood within a specific culture or context that regulates its expression. However, this framework can also present challenges. For example, immigrant parents often expect their children to conform to standards of normal behavior in their home country while children try to assimilate to their new culture. Children and parents must also conform to standards that may be considered normal in their home country that may even be illegal in their new country. For this reason it is important for practitioners to understand the cultural norms of their clients and how they can best align with acceptable practices.

Child development is organized into:

- Infancy: 0 to 2 years
- Toddlerhood and preschool: 2 to 5
- Childhood: 6 to 11
- Adolescence: 11 to 18.

STAGES AND DOMAINS OF DEVELOPMENT

The following sections describe age-graded milestones across different domains of development. Child development is organized into *infancy* (ages zero to two), *toddlerhood and preschool years* (ages two to five), *childhood* (ages six to 11), and *adolescence* (ages 11 to 18). Although in this chapter we do not discuss development during *emerging adulthood* (ages 19 to 29), in many cultures, particularly in higher income Western countries, this period is considered to be a continuation of adolescence as part of an extended transition to adulthood.

Cognitive development focuses on changes and growth in internal mental processes, such as concrete and abstract thinking and reasoning, problem-solving, memorizing and recalling, planning, imaging and creating. Cognitive development also refers to the proliferation of internal cognitive scripts or patterns of thinking and understanding, as well as larger schemas, or overarching beliefs about the self, others, and how the world works. Milestones that are categorized as part of the *linguistic* development domain reference the child's communication skills, developing speech patterns, and sentence structuring, much of which relates to the sequencing of cognitive development.

The *social-emotional domain* involves the development of relationships with others and the learning of social norms and customs, as well as growth in the ability to identify, understand, express, and modulate one's feelings. *Behavioral milestones* refer broadly to the child's development of age-appropriate behavior, such as following rules or regulating deviant behavior. Throughout infancy, toddlerhood, childhood, and adolescence, normally developing youth negotiate certain tasks or milestones that occur at specific time points, in each of the cognitive, linguistic, social-emotional, and behavioral domains.

NORMAL DEVELOPMENT IN INFANCY AND EARLY TODDLERHOOD: AGE ZERO TO TWO

From birth to age two, interactions and patterns of attachment between the infant and the primary caregiver are an important catalyst for cognitive, linguistic, social-emotional, and behavioral development. Noticeable developmental changes occur rapidly during the infancy period, particularly when comparing the completely dependent child at birth to a child at age two who is able to put words together, walk alone, and navigate the social environment with purpose.

For this reason, milestones within each domain in the following sections are organized according to the period of birth to six months, seven months to 1 year, 13 months to 18 months, and 19 months to two years, to better reflect the sequencing of change during the infancy and early toddlerhood periods. Recall that the descriptions and temporal placement of these milestones generally reflect normal development, but that infants who complete these milestones slightly before or after their same-age peers can still do so within the bounds of what is considered to be normal development.

Cognitive and linguistic milestones

Birth to six months

During this period, the infant's use of sight, sound, taste, touch, and smell facilitates cognitive and linguistic growth as well as social interaction with primary caregivers. From birth to six months, infants' perceptual acuity begins to improve, leading to the increased differentiation of external stimuli, such as patterns, colors or sounds, as well as the recognition of facial expressions. As they navigate their new world, babies are attracted to stimuli that help them in this quest—brightly colored mobiles, clear sounds like bells and whistles and easy to distinguish shapes and patterns.

These perceptual changes coincide with the infant's growing preference for familiar people and stimuli. At birth, most babies tolerate being held by a number of different adults without showing too much distress. However, closer to age six months, babies may cry or whimper more often when held by unfamiliar adults or family members, developing a particular preference for the face, vocal sounds and smell of the primary caregiver, typically the mother in most cultures. In some sense, normal developmental processes during infancy suggest it might be easier for a child to start communal care arrangements like day care at a relatively younger age (earlier than six months) before developing clear preferences for caregivers or settings.

During this stage, infants also develop a preference for face-to-face interactions and are able to recognize and imitate adult facial expressions. This recognition and imitation typically is quite pleasing to parents and increases the parent-child bond as reciprocal interactions become possible. The infant's memory and attention skills likewise improve, so that the infant can efficiently remember and attend to certain people, physical locations or objects, such as a bottle or a preferred toy. In essence, during these very early months, the infant is constructing a blueprint for life—filled with familiar objects, people and experiences.

A common concern for parents during this stage is why their babies cry so frequently—during the night, multiple times per day and even after being fed. Yet, without the ability to talk, *crying* is a normal and primary venue for communicating discomfort to caregivers—babies are born crying. Infants cry primarily to express basic needs, such as hunger, thirst, or the desire for comfort, as well as to express negative emotional or physical states, such as anger or pain. Indeed, as parents become more synchronized with their infants, they soon are able to recognize different types of cries, based on the crying pattern, intensity and rhythm. For example, *basic crying* is a cry that increases in intensity and rhythm in response to hunger, whereas *angry crying* and *pain crying*, are characterized by a long cry followed by a period of silence and rapid inhalations, usually beginning suddenly and in response to physical discomfort (Hetherington et al, 2006).

Crying

Crying is a normal and primary venue for communicating discomfort to caregivers. Infants cry to express basic needs, such as hunger, thirst, or the desire for comfort, as well as for anger or pain.

Cultural and contextual differences may also impact babies' crying patterns. It has been reported that infants from non-Western countries are quieter than their counterparts from Western countries (Zeifman, 2001). An examination of infant caregiving practices in these societies suggests that the greater amount of physical contact and the more frequent feedings typical of non-Western parenting habits may physiologically prevent infants from crying. Contextual stressors, such as poverty, can impact important child rearing necessities like food and housing, which may influence parental responsiveness and, in turn, babies' crying. A lack of food, housing, or financial security can make it difficult for parents to provide sensitive, responsive and stimulating care to their children. Therefore, the extent to which parents effectively perform their caregiving roles depends not only on their ability to recognize and respond successfully to their babies' cries, but also on stresses and supports they are provided contextually. For this reason, practitioners and health workers should be especially aware of such stressors in order to support parents who are learning to respond to crying newborns, so as not to become an additional source of stress for the family.

To the relief of many parents, by about two months of age babies also begin *cooing*, making noises that are characterized by short vowel sounds, and move into *babbling* by four months, when consonant sounds are added and speech becomes repetitive, for example, "babababa." Although crying does not stop at this time, cooing and babbling noises are pleasant and fun for parents to hear. They also serve as precursors to language development.

In addition to a preference for the voice of the caregiver, the infant also prefers to hear his or her native language and may begin communicating about the same items or events as the primary caregiver in a process called *joint attention* (Berk 2006). At the infant's birth, a new mother may point to an older sibling and tell the infant, "That's your brother!" At that early age, the infant typically

would not direct attention towards the brother at that time. When the parent utters this same sentence when the infant is closer to six months, the infant may look at the brother and babble or coo, showing interest in the same subject as the primary caregiver. This joint attention with the caregiver can enhance vocabulary development, and also demonstrates the infant's growing and related cognitive abilities. Parents at this time may start pointing out various environmental objects, people or events, directing the infant's attention and integrating new vocabulary words. Although at this stage, the infant will only change visual attention and make cooing or babbling noises while engaging in joint attention, this process becomes more established in later months and throughout toddlerhood. This also points to the importance of social stimulation and interaction as a primary means for early development.

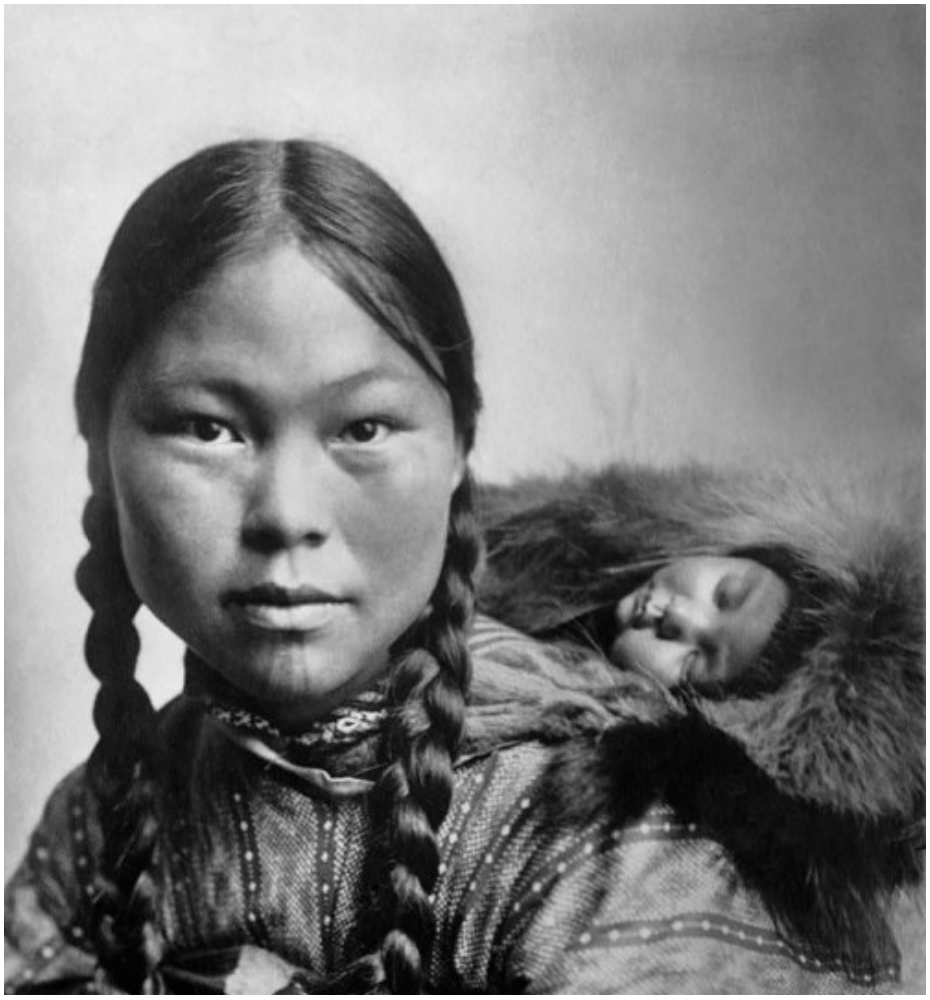
Age seven months to one year

Infants continue to use their growing perceptual and sensory capabilities to inform cognitive and linguistic development during this period as they approach one year of age. At this time, infants' memory and attention skills continue to improve, although memory in these early stages is contingent upon the familiarity of the situation or person or the infant's motivation, for example, to interact with others or use a toy.

A milestone of this developmental period is *object permanence*, an understanding that objects or people still exist when these items are not readily

Object permanence

Is the understanding that objects or people still exist when they are not readily seen or heard. Object permanency emerges around 8 months of age.



Infants need to develop a relationship with at least one primary caregiver for social and emotional development to occur normally. Proximity between infants and an attachment figure facilitates this process.

Inuit mother and baby

seen or heard, that emerges around eight months (Piaget, 1954). As an example, imagine that two eager parents are playing with their three-month-old infant on the floor, using a popular jack-in-the-box toy where the doll figure is hidden in a box and pops out again to surprise the infant. The parents notice that the infant acts as if the toy is gone when it is not directly in sight and only seems frightened when the toy pops out. They wonder whether their baby is unable to play with this toy or even whether something is wrong with their baby. Perplexed, they put the toy in the closet. They decide to try again when their baby is about eight months old and are pleased to see that their infant now searches for the jack-in-the-box doll, babbles excitedly when it pops out and appears to remember the game and where the doll went time and time again. This baby will now also engage in turn-taking and "peek-a-boo" games with caregivers, and will search for toys or other items that are out of sight, for example, when an item or toy is placed under a blanket or cloth.

At this stage, babies use babbling in conjunction with play through the manipulations of different sounds when interacting with the parent and in combination with gestural requests for objects. Infants may babble or make noises to suggest they want something, such as a toy or food, and begin to point at objects around age 1, as another form of communicating their desires. Some babies will speak their first word during this period or during the 13 to 18 month stage. Finally, infants will learn and respond to their own name at this point, which also reflects social-emotional gains in differentiating the self from those around the infant, and especially from the primary caregiver, although this process (self-other differentiation) is more apparent after 13 months of age.

Click on the picture to access a 2-hour roundtable discussion about the development of temperament.

Age 13 months to 18 months

During this time period infants expand their repertoire of earlier cognitive skills. Most babies not only search for objects hidden from sight—characteristic of object permanence—but look for these items in more than one location, such as under the couch and in other rooms, making organized games like hide-and-seek possible.

Memory storage and retrieval continues to advance—babies at this age can imitate others with increasing delays between the time of the observed behavior and the imitation of this behavior in other contexts. For example, at home, a father may put a toy cup on his head playfully, using it like a hat. Later in the week, at daycare or at the home or a relative, the 15-month-old infant may do the same thing when presented with a toy cup while in a playroom, showing a delayed imitation of the father's home behavior. Infants at this age also begin to store prior experiences in memory and are aware of times when present situations are not in accordance with prior events or their pre-existing expectations. For example, while changing a 13-month-old baby's diaper, the mother may give the baby a certain object to keep the infant occupied, like a specific stuffed animal the baby likes to hold and squeeze during diaper change time. If the stuffed toy is unavailable one day, the infant might still look expectantly at the mother and reach toward her, looking for the toy. The infant became accustomed to this routine and has noticed that this diaper change is different from their typical routine.

Infants typically say their first word at 12 or 13 months, although the average range is between eight and 18 months. Many parents may expect their

child to say "mama" or "dada" first, both of which are similar vowel-consonant combinations to early babbling. However, infants' first words may be based on context or the repetition of particular words that the caregivers say frequently throughout the day. One mother wanted to teach her infant daughter to avoid dangers and repeatedly said "no" during the day. Unfortunately, she was dismayed when her daughter's first word was "no" instead of "mama"—in fact, the daughter started to call her mother "no" for some time.

After the first word, vocabulary will grow to about 200 words during this period, although this can vary substantially by the infant's developmental environment. Socioeconomic status and cultural background are two important variables that can impact language development and content, for example, how many words children learn and whether these words are predominantly object-based (referential) or expressive. For example, the infant who learned the word "no" soon went on to learn the parents' names, calling them "mama" and "dada." Whereas referential words primarily are used to name things, expressive language describes people, feelings or social events. Children of different demographic or cultural groups may use either more referential or more expressive language during early development, depending on their external environment in combination with other individual characteristics.

Age 19 months to two years

As the infant approaches toddlerhood, cognitive advances continue in the areas of memory, problem solving and attention (executive functioning). Beginning at this stage, infants can develop and carry out action plans, such as building a specific type of structure with blocks. Whereas 10-month-old children cannot typically sustain play together—typically sit side by side in a playroom (called parallel play)—the play of infants at this stage becomes more interactive. When a pair of 20-month-old infants plays together, they might engage in *pretend* or *make-believe play*. A common theme for make-believe play is engaging in everyday tasks that the infants have observed others perform, such as eating, cooking, sleeping, or feeding household pets. This type of pretend play is also indicative of more advanced working memory and imitative skills—and perhaps another venue for constructing a blueprint for life.

Cultural differences in children's play themes have been well documented (Rogoff, 2003). Although most children will engage in ordinary chores like sweeping or food preparation cross-culturally, North American toddlers tend to participate more frequently in make-believe play that includes managing household machines such as vacuum cleaners and dishwashers, or using a mobile cell phone. In contrast, Mayan children from Guatemala have less involvement with machines but many have roles in adult activities, such as running errands to a corner store or weaving household items. The differences in themes of play across cultures highlight the fact that cultures and communities may vary considerably in the skills that are considered important or a normal part of one's household. Likewise, practitioners should note that parents who are more informed about the benefits of pretend play may take a more active role in introducing complexity and diversity into play themes. Other parents may either be uninformed about play or it may not be culturally relevant to be involved in children's play activities. Overall, the themes of play and the degree to which parents are involved in play differ

Click on the pictures below to watch developmental theorist Jean Piaget discuss and illustrate his theory about intellectual development (in French and English with subtitles in English).

Part 1 (12:25)

Part 2 (13:05)

Part 3 (11:30)

Part 4 (4:49)

across cultures, and should be taken into account before making assumptions about "normal" pretend play.

Along with the cognitive gains at this stage, this period brings several advances in linguistic skills. Infants at this age start combining two or more words, like "no mom!" or "want that," and the infant's vocabulary also grows noticeably. Because children at this stage are learning and practicing word pronunciation, they often replace certain parts of a word with vowels of consonants that are easier to say or leave off the end of words. During his first day of daycare, one infant constantly asked for "ju" during lunchtime and became upset when the preschool teachers tried to ask what this meant. When this infant's father picked him up from daycare that afternoon, he was able to explain to the teachers that this meant "juice," reflecting the infant's routine at home, where he got juice every day with his lunch. In a Spanish-speaking country, such as Mexico, an infant might initially say "melo etá" instead of "caramelo está" in Spanish ("the candy is there," in English) to her granddad as she is trying to find the candy her granddad has playfully hidden away from her. This infant has mispronounced part of the words and left off several sounds. Although parents may express concern that their infant cannot form full words, this type of word replacement or shortening is typical for infants at this stage.

Social-emotional and behavioral milestones

Is it OK for parents and children to sleep together?

How long should they share a bed?

Just as infants depend primarily on caregivers to facilitate their exploration of the external environment and, by extension, their cognitive and linguistic development, much of the infant's social-emotional and behavioral milestones are negotiated in the context of the infant's relationship with the primary caregiver. A critical milestone during this period is the development of the *attachment relationship*, or the infant's emotional bond to the primary caregiver (Ainsworth, 1979). The strength of this bond indicates the extent to which the infant can use the caregiver as a *secure base* from which to explore the world, return to during times of distress, and use as a framework for social-emotional development.

Birth to six months

At this early stage, infants are learning to regulate their emotions and behavior, although they may not seem to be very good at it. Part of self-regulation includes the formulation of regular behavioral patterns in the areas of eating and sleeping, for example, as these behaviors can also impact the infant's level of emotional arousal and degree of affect regulation. Although most babies will not sleep through the night until they reach their first birthday, infant sleep cycles become more predictable by the age of eight weeks, when infants are sleeping for longer periods at night than during the day. It is important during this period for parents to establish regular activities and routines—it is easier to learn to wait for something that comes at the same time each day than for something that is random.

Sleeping routines are often difficult for parents to establish and may vary considerably by culture. Is it OK for parents and children to sleep together? How long should they share a bed? Although the majority of American infants typically sleep separately from caregivers in a crib, other cultures prefer *co-sleeping* arrangements, where the infant sleeps with one or more caregivers in the same bed, often with other siblings as well. For some cultures, co-sleeping is seen as

an important indication of the infant-caregiver bond and is presumed to have health benefits over sleeping separately. These cultural variations are likely to be reinforced in other practices—the important thing to remember is that infants need routines, and that appropriate routines do vary cross-culturally.

Regardless of the varying sleep and wake cycles or patterns in a particular culture, infants at this stage will begin to exhibit more predictable sleeping habits and cycles. Similarly, eating schedules will become more predictable, with the infant transitioning from feeding five to eight times per day in the first couple of months after birth, to feeding three to five times per day, at relatively equal intervals, by the sixth month of life.

Just as routines are important for babies, infants can easily become overwhelmed by new experiences, taxing their emerging self-regulation skills. For example, imagine that a caregiver is dangling a brightly colored mobile over her three-month-old infants' face, making whooshing noises as she moves the mobile parts above and around the infant's head. After cooing and smiling for a few seconds, the infant suddenly looks away, disengaging from the caregiver's play. Should the caregiver be upset? Did she do something wrong? Is there something wrong with the infant?

Such behavior is normal at this stage of development. It is called *gaze aversion*, and is a normal reaction to overstimulation and arousal. In this case, the infant will look away from the stimuli—for example, turning away from the mother's play with the mobile—as a method to regulate arousal. Over time, through appropriate and sensitive interactions with caregivers, infants' tolerance for emotional arousal and regulation of this arousal will increase. After becoming habituated to the caregiver's play with the mobile, this infant may begin to track the mobile and coo at the caregiver for a longer period of time, eventually maintaining this play.

Gaze aversion

Gaze aversion, looking away from a stimulus, is a normal reaction to overstimulation and arousal and is an infant's attempt to regulate arousal.

The infant's range of emotions increases during this period from the dichotomous states of either pleasure (relaxation) or pain (discomfort) to the differentiation of various feeling states within these broad categories. Emotional expression becomes more varied, organized and specific to the infant's external environment and/or internal feeling state. During these months, the infant also begins to match the caregiver's feelings during face-to-face interactions. By the age of six weeks, the infant develops a *social smile* in response to human faces and particularly the face of the primary caregiver. At three or four months, the infant also begins to laugh, especially in response to the laughter of other adults or the surprise at discovering a fun, novel situation, such as the caregivers making funny faces at the infant. Frustration and the closely related emotional state of anger become more distinguishable by about six months, at which point the distinct state of sadness also emerges. Infants will typically withdraw when feeling sad, although crying and its distinct patterning can accompany a range of negative emotional states. In truth, the multiple emotions infants display only six months after birth are striking!

Parents often are surprised to learn that infants (and people) vary greatly in *temperament*, defined as a biological predisposition to patterns of behavior and interaction (Wachs, 2006). Imagine that several new mothers are sitting together at a weekly playgroup with their six-month-old infants when one mother brings

Photo: Linda Cronin

up several eating and sleeping issues she has been having with her baby. Her baby has yet to develop routine sleeping and eating patterns and often cries in response to new toys or situations that he is exposed too. Another mother mentions that she has not had this experience at all, that her infant sleeps through the night and loves exploring new objects and meeting new people. A third mother comments that she is not sure whether her baby will be a social child later in life because the mother remembers being told that she was shy when she was a baby.

Temperament is a biological predisposition to patterns of behaving and interacting.

The three mothers wonder which of these babies is the most "normal". They all are! They are normal, just different. The first baby would be classified as having a difficult temperament, the second as easy, and the third as slow-to-warm up. Babies who exhibit difficult temperament are those who are highly reactive to external stimuli, expressing more negative emotions, such as anger, fear, or anxiety, and are less likely to effectively manage or regulate those emotional states. Irregular sleeping and eating habits are also associated with this category (Thomas & Chess, 1977). Easy infants are thought to have more regular eating and sleeping habits and to adapt well to new situations or people; these infants are also less emotionally reactive and express and regulate emotions and arousal states without a predominance of negative emotionality. Finally, slow-to-warm-up infants may initially appear more withdrawn than others, with mildly negative responses to novel situations, but eventually exhibit positive and adaptable characteristics and patterns of social responding to others.

Although temperament is thought to be a relatively stable and biologically-influenced trait that can predict later social-emotional development, only 60% of infants can be classified into a temperament category, and infant traits may change over time. Indeed, temperament style has been found to interact with elements of the external environment, such as maternal responsiveness or family chaos, making

it difficult to reliably predict how temperament styles in infancy and toddlerhood relate to later social-emotional development (Essex et al, 2011; Rubin et al, 2002). Remember, the settings where children grow up will influence how they turn out—nature and nurture join forces to make us who we are and who we become.

Additionally, cross-cultural studies have shown differences in infant temperament when comparing Western and non-Western populations (Ahadi & Rothbart, 1993). For example, North American infants typically score higher on measures of activity level (intensity and frequency of motor movements), approach tendencies (degree to which a child accepts new people, objects or situations), and positive mood (extent to which a child expresses positive emotions) when compared to Chinese infants. Conversely, this line of research has shown that Chinese infants are, on average, more easily consoled during a crying episode than their North American counterparts.

Age seven months to one year

The most apparent social-emotional and behavioral milestones during this period are the development of the *attachment relationship*, and the occurrence of *stranger wariness* and *separation anxiety*. Infant-caregiver attachment refers to the infant's bond with the primary caregiver, and the extent to which the infant can use the caregiver as a *secure base* for exploration and for comfort. Researchers initially classified attachment styles through a series of interactions called the "Strange Situation task", involving short separations from the primary caregiver and exposure to another adult in the context of an unfamiliar playroom (Ainsworth, 1979).

Secure attachment refers to infants who cry when the primary caregiver is absent, but allow themselves to be comforted upon the caregiver's return; these infants also use their caregiver as a secure base which they periodically "check in with," by physically toddling back to or visually glancing over at the caregiver, during their exploration of new environments or situations. *Separation anxiety* can be an overt sign of secure attachment, although not all infants evidence this type of behavior and it may occur regardless of attachment classification (Berk, 2006). Many primary caregivers express concern that at this age their children cannot tolerate minor separations and begin crying inconsolably when the caregiver leaves, whether parents are leaving their child with unfamiliar adults in a new daycare setting or in the care of familiar family members. This anxious behavior peaks around one year of age, along with *stranger wariness*, in which the infant displays discomfort in the presence of unfamiliar people. Although separation anxiety may persist even after the infant develops a regular routine of separations from the primary caregiver, for example, attending daycare five days per week, this behavior is normal up until toddlerhood.

Insecurely attached infants fall into several categories, all of which reflect disruptions in the infant-caregiver bond. *Avoidant attachment* characterizes infants who do not become distressed when the caregiver leaves the room and react to both strangers and the caregiver in a similarly unresponsive fashion. Infants who exhibit *resistant attachment* are hesitant to explore an unfamiliar playroom while the caregiver is present, become upset when she leaves and are angry and sometimes aggressive with the caregiver when she returns, showing some resistance to being comforted. *Disorganized attachment*, a category created after several years

Insecure attachment

Disruptions in the infant-caregiver bond can result in insecurely attached infants. This can manifest in:

- Avoidant attachment, when infants do not become distressed when the caregiver leaves the room and react to both strangers and the caregiver in a similarly unresponsive fashion.
- Resistant attachment, which is characterised by hesitancy to explore an unfamiliar playroom while the caregiver is present, become upset when she leaves and are angry and sometimes aggressive with the caregiver when she returns, showing some resistance to being comforted.
- Disorganized attachment, when infants appear confused, contradictory or emotionally labile in their behavior, with some of these infants showing signs of disassociation (frozen facial expression and total unresponsiveness).

of initial attachment research, represents infants who are confused, contradictory, or emotionally labile in their behavior, with some of these infants showing signs of disassociation (frozen facial expression and total unresponsiveness); this category reflects the most severe form of insecure attachment.

Although a healthy infant-caregiver relational bond is important, the attachment relationship and its influence on later development depend on multiple individual and contextual factors. These include maternal sensitivity and responsiveness, infant temperament, home environment, socio-economic status, racial/ethnic background, and other influences in the infant's life (Seifer et al, 1996; Wong et al, 2009).

The biological mother also is not necessarily the primary attachment figure; the infant may bond with other important adults, including fathers, extended family members and foster parents. Attachment classifications also depend a great deal on the infant's cultural context. Attachment classifications and the Strange Situation task are culture-bound phenomena, and may not adequately describe infant-caregiver attachment in other cultures. For example, suppose a Japanese infant and his mother are placed in a Strange Situation task and the infant does not appear to be distressed when his mother leaves the room. When a stranger comes in to play with the infant, the infant is somewhat non-responsive and continues playing on his own. This pattern persists when his mother returns to the room. Should this infant be classified as having an avoidant attachment pattern? Not necessarily; infants in non-Western societies may display behavior that North Americans would characterize as avoidant, but in reality these patterns are normative in other cultural groups (Marcus & Kitayama, 1991). Finally, attachment patterns, like temperament, are not always stable over time and can change according to changes in the infant's temperament, home life, and environmental context.

Social referencing

Social referencing is the term used to describe the way that infants take their cues from others in deciding what emotions and actions are appropriate in a specific situation.

Social referencing, another social-emotional milestone, also begins during this period. Imagine a baby at this age falls down while playing with siblings and the parent in the grass at the park. The infant has fallen on a relatively soft surface and is not hurt. The infant appears surprised at the fall, but looks quickly at the caregiver, who smiles and tells the infant, "Oops! You fell down." The infant smiles in return and continues to play. This interaction is indicative of social referencing, which occurs when the infant looks to either the primary caregiver or other important adults before reacting to ambiguous or novel situations. Another example of this situation would be if an unfamiliar dog approached the infant, siblings, and caregiver while they were playing in the park. When the infant sees his sibling and parent petting the dog and guiding the infant in interacting with the dog, the infant will use these behavioral and emotional responses to appraise the nature of the situation and respond accordingly. Although infants will be wary of strangers or new animals, they are more likely to respond positively if they view their caregiver exhibiting positive emotions in response to the stranger's or the animal's presence.

Social referencing can also give children opportunities to discover and imitate how to react to aspects of their social environment—in other words, social referencing provides a basis for acquiring knowledge about culture-bound social nuances. For example, in a context where different castes co-exist, an infant from a lower caste may witness, and subsequently learn to imitate, submissiveness in

the presence of high-caste persons from watching interactions between primary caregivers and high-caste individuals. Additionally, if this toddler grew up in India, he might learn through social referencing at an early age to only use his right hand for eating—in India, the right hand is the "clean" hand while the left is the "dirty" hand, used for cleaning oneself after defecation. This premature right-hand dominance might then lead the child to an earlier knowledge of left and right compared to children his age in other countries, showing how social referencing can promote the learning of culture-bound social nuances and can lead to additional cultural differences.

Social referencing continues to develop throughout toddlerhood and beyond, as individuals take cues from others to learn how to appropriately respond to different emotionally stimulating situations or use others' responses in comparison with their own emotional states and preferences. This milestone also indicates that the infant is becoming aware of the difference between the self and others, as well as of the desires and feelings of others. Corresponding with this growing realization, another important milestone during this period is the infant's ability to follow simple directions given by others, which appears at nine to ten months of age and continues to advance later in infancy. In this case, the infant playing with the dog may be able to follow the mother's command to give the dog a stick to play with, and the infant will most likely be able to comply, following the directions of the primary caregiver.

Age 13 months to 18 months

During this stage, more concrete signs of *self-awareness* develop. Infants now are aware that their body, emotions and behaviors are separate entities from those of their primary caregiver and from others. Infants at this stage begin to recognize themselves, a critically important step in development. A compelling example of this self-awareness is illustrated by an infant's first look in the mirror. Although initially surprised, most infants quickly learn that they are looking at themselves and not someone else. Importantly, cross-cultural studies have shown that there are significant differences in the responses of Western and non-Western infants when looking at their reflection in a mirror (Broeschet al, 2010). While mirror recognition may be a marker of growing self-concept in Western infants, this is not necessarily the case for non-Western infants. As such, the consideration of the mirror self-recognition as an index of self-awareness in children's development is influenced by the cultural context in which the child is embedded.

The changes during this period also show advances in emotional development, as infants are now able to play with peers through imitation or mutual play tasks and can also demonstrate empathy towards others. *Empathy* is the capacity to reflect and feel the emotions demonstrated by another person. When infants see displays of emotion in their caregiver, particularly negative emotionality, infants may show their own personal distress or comfort the caregiver, although the latter empathic response typically occurs around the age of two. At this stage, infants continue to differentiate their emotional experiences from others as their sense of self-awareness grows, but also show signs of prosocial behavior.

Age 19 months to two years

As toddlerhood approaches, the infant becomes aware of the names for various emotional states and starts to use language and other behaviors to regulate

Table A.2.1 Summary of developmental milestones from zero to two years

	Cognitive and linguistic milestones: Social stimulation and interaction	Social-emotional and behavioral milestones: Attachment relationships
Birth to six months	• Better differentiation of external stimuli (sounds, colors, etc.) • Recognition of facial expression • Preference for familiar people, stimuli and face-to-face interactions. • Improvement of memory and attention skills (infants can remember and attend to certain people, physical locations or objects) • Use of crying to express basic needs (hunger, thirst, comfort, etc.) • Emergence of language precursors: Cooing (2 months) and babbling (4 months) • *Joint attention*: Caregiver and baby take turns exchanging facial expressions and noises.	• Early behavioral and emotional self-regulation based on establishment of regular activities and routines (e.g., eating, sleeping, etc.) • Sleep cycles become more predictable by the age of eight weeks • *Gaze aversion*: Normal reaction to overstimulation and arousal • *Social smile*: As a response to familiar human faces (6 weeks) and as initiated by the baby (3 or 4 months). • Multiple displays of emotions by age six months (e.g., frustration, anger, sadness, etc.) • Individual and contextual differences in *temperament*
Seven months to one year	• Growing perceptual and sensory capabilities. • Improvement of memory and attention skills: Dependent on the familiarity of the situation, person, or infant's motivation • *Object permanence* (eight months): Objects and people still exist although not seen or heard • Emergent language skills: Babbling when interacting with the caregiver, some will speak their first word at 12 months or in the next stage • Can point to an object (e.g., a toy) around one year • Will learn and respond to own name.	• Development of *attachment relationships*: Infant's bond with the primary caregiver • *Separation anxiety*: Displays anxiety when the caregiver leaves • *Social referencing*: – How to react to ambiguous or novel situations – Facilitates acquisition of culture-bound social nuances – Differentiation between self and others.
13 months to 18 months	• Expansion of their repertoire of earlier cognitive skills: – Object permanence: Will look for the hidden item in more than one location – Memory and retrieval: Increasing delays between the observed behavior and its imitation in other contexts – After the first word (eight-18 months): Vocabulary grows to about 200 words.	• *Self-awareness*: Recognition of oneself • First demonstrations of *empathy*: Capacity to reflect and feel the emotions demonstrated by another person (e.g., when infants see displays of negative emotionality in their caregiver, they may show their own personal distress or attempt to comfort the caregiver).
19 months to two years	• Cognitive advances in memory, problem solving, and attention: – Development and execution of action plans (e.g., building a structure) – Pretend or make-believe play (20 months) and daily life play themes • Advanced linguistic skills: – Combining two or more words – Replacement of parts of a word with vowels or consonants that are easier to say – Vocabulary growth.	• Use of language and other behaviors to regulate emotional experience • Growing awareness of others • Emergence of more complex emotions (e.g., embarrassment, guilt, shame, etc.) • Lower intensity of separation anxiety • First signs of self-control: Able to delay engagement in an enjoyable task • Play: Imitation of others, use of language and play choices based on gender stereotypes.

his or her emotional experience. For example, the infant may be able to name an internal feeling state and tell the caregiver about it ("I'm mad!") or offer the sad caregiver a hug, showing an increasing capacity for empathy. Consistent with the growing awareness of others during these later stages of infancy, the more complex emotions emerge at this time, such as embarrassment, guilt, and shame, all of which are emotional responses to others' perspectives of the child's behavior. For example, when one family's two-year-old was caught with her hands in the cookie jar, she appeared to respond with embarrassment to her mother's scolding and started to cry when she realized that this action was not allowed. In earlier stages, this same infant may have only cried out of surprise and anger when her mother took the cookies.

Behaviors indicative of separation anxiety decrease in their intensity during this stage and infants begin to show higher-level emotional regulation skills, such as delay of gratification. Although self-control at this age varies according to individual differences, some infants nearing toddlerhood can delay engaging in an enjoyable task or wait to receive a prize if asked to do so. Play behaviors during this time period revolve around imitation of other children, although language is also introduced to describe or direct the play and infants begin to make choices about play items based on gender stereotypes.

Infancy at a glance

The period of birth to two years is an exciting time of incredible advances in cognitive, linguistic, social-emotional and behavioral development, summarized in Table A.2.1. During the first few months, the infant relies primarily on the caregiver for the provision of basic needs and the facilitation of different developmental advances across multiple domains, by age two the infant shows signs of self-awareness, independence, social coordination, and empathy, which continue to develop during toddlerhood and preschool, setting the groundwork for social engagement and learning.

NORMAL DEVELOPMENT IN LATE TODDLERHOOD AND PRESCHOOL: AGE TWO TO FIVE

Late toddlerhood generally refers to ages two to three. Preschool years typically are between ages three and five. However, due to temporal overlaps within these developmental periods it is also reasonable to discuss cognitive, linguistic, social-emotional, and behavioral milestones throughout toddlerhood and preschool ages as one developmental period spanning ages two to five. During this stage, children continue to negotiate and balance their reliance upon the primary caregiver with their desire for independence. They become more self-reliant in preparation for the school-age years, often their first venture into the world beyond their immediate family and community.

Cognitive and linguistic milestones

Cognitive milestones between ages two and five largely reflect the child's growing capacities in the areas of working memory, sustained attention, problem-solving, and organization, which facilitate the child's early learning and school readiness. Piaget's theory of cognitive development terms this period the

preoperational stage, wherein the toddler makes advances in his capacity to represent events or stories mentally, but remains *egocentric*, or self-focused, in his thinking (Piaget, 1954). However, recent research suggests a more flexible view of cognitive development at this age, with the toddler and preschooler making some gains in their abilities to empathize with or take the perspective of others.

A concerned parent of a three-year-old boy seeks the advice of a mental health professional. The parent is worried because the toddler often talks at length about an imaginary friend with whom the child says he plays many games. The boy has named the imaginary friend, insists that the friend come everywhere with the parent and the rest of the family, and becomes upset when other family members challenge the existence of this friend. While this behavior would not be considered typical at the age of seven or eight, beginning in toddlerhood and preschool, normally developing children will engage in more complex *sociodramatic play*, including developing imaginary friends, reflecting a growing capacity for mental representations.

Make-believe play with peers begins at age two or 2½, and increases in complexity until age four or five, when preschoolers begin to mutually build upon their make-believe play (Davies, 2004). Make-believe play indicates that children are able to mentally represent their world both with and without play objects, and can create imaginary sequences or representations of real or pretend life events. The development of an imaginary friend is normal at this age and is only one of many variants on sociodramatic play, which can also include playing house or doctor, pretending to be a superhero, or pretending that stuffed toys or other items can talk. Although at this stage children often pretend that inanimate objects can talk or think, toddlers and preschoolers increasingly differentiate animate from inanimate items. Sociodramatic play also involves and strengthens other cognitive and social-emotional capacities, such as working memory, attention, reasoning, self-control and cooperation, and perspective-taking, all of which grow and develop during this period.

At age three or four, toddlers also come to understand *dual representation*, or the recognition that a symbolic object, such as a photograph or model of a train station, is both an object and a symbol of something else, such as a family member or a train. Along with these advances in mental representation, children during this period also transition from believing in magic and imaginary beings, such as fairies, witches, vampires, or goblins at ages two and three, to searching for logical explanations for make-believe persons such as Santa Claus at ages five or six. However, magical thinking or belief in otherworldly figures will vary according to cultural beliefs and norms, and continued belief in these figures is not necessarily atypical in certain cultural contexts. For example, in modern Chile, many Mapuche communities believe witchcraft to be the primary cause of illness and misfortune. Among the Mapuche, is not strange to find children, adolescents and adults who believe in the existence of witches and their magical powers. Therefore, health practitioners working with these communities should take these beliefs into account when conceptualizing normal development.

Whereas cognitive problem solving during infancy relied mostly on trial and error, problem-solving during this stage is enhanced by the child's greater ability to sustain attention, engage in planning behaviors and use cognitive *scripts*

Photo: San Jose Library

or internal models of prior behavior and experiences for everyday problem-solving or interpretive purposes. For example, a toddler may learn how to build a taller and more stable structure with his blocks after learning how to do so from watching peers or caregivers and will integrate this learning into building larger block structures in the future. In terms of interpreting everyday experiences, children between the ages of two and five can typically relay the steps or actions involved in activities such as visiting a relative ("we drive to grandma's, she makes us dinner, we watch a show, we go home") or a day at preschool. Thinking at this stage also becomes more oriented around cause and effect relationships, and memory span can grow to up to four items. Problem solving can also occur through parental scaffolding or support, and through the developing child's use of *private speech.* Private speech occurs when toddlers and preschoolers talk to themselves out loud, providing themselves with guidance when solving problems, such as thinking through or planning their behavior (Berk, 2006). This milestone may also inform the development of more advanced memory, categorization and self-reflective processes.

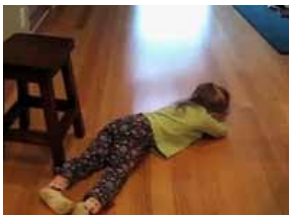
Cognitive and linguistic gains in school-based tasks become apparent during these ages, when children learn early literacy and numeracy skills. Although the learning of such skills will vary substantially according to language exposure in the home, socioeconomic status and cultural context, many children during their toddlerhood and preschool years learn to count and recite the alphabet. Children also can usually relate details of a story to others and ask questions to clarify their understanding by age five. Other language skills that continue to develop

and improve between the ages of two and five are in the areas of vocabulary and sentence construction. Important milestones include the growth of the child's vocabulary to about 2,000 words by age five, their ability to define known words and integrate new words into sentences upon hearing them toward the end of the preschool period. Two-year-olds will put sentences together with only two or three words. By age four or five the child can typically communicate with sentences that are more grammatically complex, utilizing different verb tenses, and can speak in coherent verbal exchanges with others.

Social-emotional and behavioral milestones

Many social-emotional changes occur during the toddler and preschool years. While younger children may comply with parental demands or requests, children at this stage are more likely to be resistant, as they balance their simultaneous desires for parental scaffolding and increased autonomy. Toddler and preschooler transition through a time of increased, and then decreased aggression and temper tantrums, and make overall gains in their understanding of emotions—in both their own emotional expression and that of others.

One afternoon, a mother comes to pick her child up from a relative's home and finds that her toddler bit one of her same-aged cousins in response to the cousin pushing the toddler while they were engaged in play. The mother is shocked, embarrassed and wonders how this could happen—her daughter has never bitten anyone at home and has been taught to use her words when she is upset. As her family member asks the mother where the toddler learned this behavior, the mother begins to feel concerned about whether this is age-appropriate or reflects the beginning of a behavioral problem. This type of aggressive behavior is quite normal for toddlers and even preschoolers. At age two, there is a universal increase in physically aggressive behavior, which can include biting, hitting of peers, family members and the primary caregiver. *Temper tantrums* are also normative during late toddlerhood. These intense emotional outbursts usually originate with the child's resistance to parental requests, frustration with external events, or feeling state of being tired or hungry. Temper tantrums typically appear between the ages of one and three, when children are still acquiring language skills to describe their emotions and desires; they should decrease significantly, along with physically aggressive behavior, by ages four or five, when children increase their emotional vocabulary, self-regulation skills and knowledge of socially appropriate displays of emotion. Although behaviors like biting, hitting or temper tantrums can be embarrassing for parents—particularly when these behaviors happen in a public setting like at preschool or in the supermarket—this behavior is normal for children this age, within reason.



Researchers have recently deconstructed the patterning of temper tantrums. Click on the link to view (1:54)

While physically aggressive behavior decreases over the course of this period, verbal aggression and other subtypes of aggression, such as *instrumental* aggression, begin to increase. Whereas the aggressive behavior of most two-year-old children is *reactive* in nature (in response to an external event), as children age, their aggressive behavior can become more instrumental, or calculated and goal-oriented, between ages three and four (Berk, 2006). For example, four-year-olds may act aggressively in order to gain access to a wanted toy, whereas the two-year-old in the previous example bit her cousin in response to being pushed. On the other hand, children also may become more competent social-problem solvers at this time, especially

given appropriate modeling by adults and other peers. Overall, aggressive behavior is normative during this period, but should decline as children enter their school-aged years, by about five or six years of age.

Other social-emotional milestones in emotional expression and in understanding the emotions of others occur during this period. In particular, more complex behavioral and linguistic expressions of emotion, including empathy and sympathy, develop during this time. For example, when seeing his mother become sad and upset one evening, a two-year-old might hug this distressed parent. In contrast, an older preschooler will use physical actions as well as words to provide comfort, asking, "What's wrong mommy?" hugging his mother and even repeating soothing phrases he has heard from his mother or other caregivers, like "It will be OK." Over the course of this developmental period, children come to rely more on words than behavior to express how they feel and to understand the feelings of others. By age three or four, toddlers and preschoolers become more accurate in their appraisal of emotions and emotion-related behaviors in others, including peers. This period is also when children develop their first friendships, which increase in importance as children reach school age. An understanding of cultural norms for emotional expression, or *emotional display rules*, becomes more engrained, and children become more aware of when to display certain emotions. Part of the normative decrease in temper tantrums by the end of this period is due to an increase in linguistic abilities, but a contributing factor is also the preschooler's recognition that these emotional displays are not appropriate for most, if any, situation. Other display rules, such as when to show excitement and when to laugh (playing games, after dad tells a joke) and when to be quiet (when mom is on the phone, at religious ceremonies or services) also become more entrenched and understood. Both emotional display rules as well as *moral beliefs*, which also begin to emerge at this time, are largely influenced by peers, caregivers and the child's larger cultural context.

Children's capacity to describe mental states and the characteristics of others also grows in accordance with increasing self-awareness and language skills. When a two- or three-year-old is asked to describe his best friend, this toddler will use the friend's name, but will rely on physical appearances, such as gender or age, or behavioral competencies to describe the friend. By contrast, children in the later preschool years will describe others by labeling the emotions, attitudes and characteristics of others. At this age, along with a description of physical traits and gender, a child might describe his best friend as someone who is "funny, and good at soccer, and comes over a lot." During this period, children also come to recognize cultural and racial differences between groups. Finally, children reach the milestone of *gender constancy*, or the idea that gender cannot be changed, and also become more aware of gender stereotyped behavior by age five or six, adhering more frequently to gender-based expectations of play and social behavior, which may vary across cultures and environmental contexts. While a three-year-old American toddler might enjoy playing house and dress-up with his female peers, by age five this preschooler might choose to play with cars or other action-oriented games with his male peers instead, adhering to gender stereotyped behavior that is common in North America. Gender constancy can also impact the way children think about their future roles in the world of work, although this varies cross-culturally. Consider a five-year-old North American boy who used to tell his

father he wanted to be a teacher. One day, the child surprises his father telling him he doesn't want to be a teacher anymore. When his father asks him about his new resolution, he simply states, "I can't—all teachers are women." In contrast, a Cameroon child of the same age might have a different experience, as in his school there are only male teachers.

Certain behavioral changes that are related to physical maturation are also important to acknowledge in the realm of behavioral development during toddlerhood and preschool ages. Between the ages of two and five, children become more competent at feeding themselves, while *toileting* oneself also typically emerges and becomes part of the child's behavioral repertoire at this time, with the majority of children reaching relative independence in this area by age four or five. While puberty, or sexual maturation, does not begin until age 11 or 12, with toddlers and preschoolers' continuing growth in self-awareness, they may become more curious about, and begin to explore themselves sexually. In the realm of normative behavior, children at this age may touch themselves, ask caregivers or peers questions about genitalia and show peers genitalia. While many parents are concerned to see their child's behavior becoming more sexualized, this behavior is normative to some extent. However, forceful or sexually coercive behavior, and knowledge or imitation of adult sexual acts is usually atypical behavior and may indicate instances of sexual abuse or overexposure. As with other developmental milestones, physical and behavioral changes during this period should be considered in the context of children's individual and contextual differences.

Click on the picture to view a short video (6:18) illustrating some of Piaget's stages of intellectual development.

Toddlerhood and preschool years at a glance

Toddlers and preschoolers show significant changes in their understanding of the self and others, evidenced by the completion of developmental milestones in the areas of mental representations, problem solving, and other cognitive skills, as well as in the areas of language, social-emotional process and behavior; this is summarized in Table A.2.2. For many cultures, the successful completion of toddler and preschool milestones indicates readiness for formal educational learning or schooling, which usually begins at age six or seven.

NORMAL DEVELOPMENT IN CHILDHOOD: AGE SIX TO 11 YEARS

Cross-culturally, the developmental periods from age six and to 11 is a time when children become more involved in the social world and learn skills for later use in adulthood, through their transition to either formal schooling or in societies without schooling, through apprenticeships related to future work or familial roles. Children become more attuned to cultural norms, rules and laws, and gradually begin to shift their focus and attention from parental relationships to social and peer-oriented activities, particularly as they reach age 11 and the beginning of adolescence.

Cognitive and linguistic milestones

Between the ages of six and 11, children make important information processing advances in the areas of attention, automatization and memory, as well as other mental operations. By about age seven, children are typically able to direct their attention toward one set of stimuli or one task while simultaneously ignoring

Table A.2.2 Developmental milestones in late toddlerhood and preschool: Age two to five years

Cognitive and linguistic milestones: Mental representation	Social-emotional and behavioral milestones: Balance between parental demands and child's need of autonomy

• *Sociodramatic play* (by age three):
  – Reflection of a growing capacity for mental representations (imaginary friends, etc.)
  – Involves and strengthens other cognitive and socio-emotional capacities (e.g., working memory, attention, reasoning, self-control, cooperation, perspective-taking, etc.)
• *Dual representation* (age three or four): The recognition that a symbolic object (a photograph) is both an object and a symbol of something else (a family member)
• Continuously searches for logical explanations and cause/effect relationships ("why" period)
• *Cognitive scripts*: Internal models of prior behavior and experiences that guide child's behavior
• Memory span grows up to four items
• *Private speech:* Children talk to themselves out loud, providing themselves guidance when solving problems
• Learning of early literacy and numeracy skills
• Growth of child's vocabulary to about 2,000 words by age five
• Grammatically complex sentences by age four or five (use of different verb tenses, etc.)
	• Normative *temper tantrums*:
	  – Appears between the ages of one and three, and decreases along with physically aggressive behavior, by ages four or five
	  – Related to language and self-regulation skills achievement
	• Decreased *reactive aggression* (in response to an external event) and increased verbal and instrumental (goal-oriented) aggression
	• Aggressive behavior is normative during this period, but should decline by about five or six years of age
	• More complex behavioral and linguistic expressions of emotion (empathy and sympathy)
	• Development of first friendships.
	• Emergence of *moral beliefs* and motional display rules: cultural norms for emotional expression
	• Growth of children's capacity to describe mental states and characteristics of others:
	  – By age two or three, descriptions will rely on physical attributes
	  – By age four or five, the description will rely on the emotions, attitudes and characteristics
	• *Gender constancy*: Gender cannot be changed; becomes more aware of gender-stereotyped behavior at ages five or six
	• Physical maturation: Feeding and toileting oneself.
	• Sexual curiosity and self-exploration: Normative to some extent.

extraneous stimuli. Whereas a five-year-old child has great difficulty focusing on academic tasks while hearing other children talk or play outside the classroom window, by age eight or nine most children can focus on their material, or are easily redirected. This *selective attention* is necessary for critical thinking and the learning of new skills or information (Berk, 2007). Self-control also plays a role in the child's attention skills, as do societal expectations, communicated through school or other learning environments.

A father tells his two children, ages six and 10, to get ready to leave the house quickly, as they are late for the 10-year-old's soccer game. The father says, "Both of you please put on your shoes, go get your jackets, take a snack with you, and fill up your water bottles while I put the gear in the car". When the father comes back in the house, the 10-year-old is ready to go, but the six-year-old has to be reminded of several steps by his father and older brother, such as getting his snack and filling up his water bottle. "My six-year-old is really out of it," thinks the father, wondering whether his younger son has an attention or memory problem.

Although during this period of time, the child's memory capacity and skills in both storing and retrieving information increases and improves, becoming faster and more efficient, age 11 marks when the child is able to hold sequences of steps in mind and follow instructions more efficiently than in the early school years. In this example, the six-year-old has not developed the memory capacity and efficiency that his older brother has. During these years, the child can also rely on *gist-based memory*, or the basic components of what they learned or what happened (Berk, 2007). While the six-year-old may remember some parts of his brother's game, his older brother will likely come home with a more comprehensive memory; yet both children will remember the overall "gist" of what happened—that the older brother's team won the game.

Children also become aware of various skills to improve or increase memory during this period, spontaneously beginning to use cognitive rehearsal strategies like the creation of mental cues and categories, or the repeating of information to help themselves recall important tasks or processes. When he first learned the rules of soccer at age eight, the older child in our example often repeated several rules to himself during practice or after being reminded of them by his coach as a method to improve his memory. Soon, the knowledge of these rules became more automatic, as memory is involved in the process of automatization. *Automatization*, or *automaticity*, refers to the act of practicing or repeating new information and related thoughts or behaviors until these processes become more routine (Davies, 2004). Automaticity is a necessary component in learning virtually any new task or skill, such as academic tasks like reading, writing, completing mathematics operations, or other skills like learning to play soccer.

Along with gains in information processing, children between the ages of six and 11 meet many milestones in several different cognitive operations. During the preschool years, asking a child to differentiate their right and left will leave most children confused and the vast majority will not understand when a parent tells them that they have to "wait five minutes" before having a snack. Preschoolers have a limited orientation to time and spatial organization while, beginning at age six, children become more advanced in these areas. By this age a child can distinguish their own right from left and can note the right or left side of others around age seven or eight. Time and calendar dates become more meaningful after age seven, when most children can usually identify when their birthday is, and will understand when they are told to "wait five minutes" for a snack. Other mental operations include more sophistication in the seriation and categorization of objects according to specific characteristics such as shape, size, length, color, as well as increasing capacity for the processing of auditory and visual information. It is important to note than not all children classify objects in the same way across cultures. Children in many communities, especially if they have not had much schooling, might sort objects according to their function rather than according to other dimensions such as size, shape, or color. For example, children with more experience working on a family farm may classify a hoe and a potato in the same group because a hoe is used to dig a potato.

Seriation

Refers to the ability of sorting objects or situations according to characteristics such as size, color, shape, or type. This capacity is developed during the concrete operations stage, usually from seven to 12 years of age.

Problem solving and reasoning also improve during childhood as thinking becomes more organized, creative and flexible, and the capacity for *metacognition*, or "thinking about thinking" develops. As a related process, *cognitive self-regulation*, or the process of monitoring one's thoughts and actions in learning new skills

or solving problems, also occurs during this period and continues to develop during adolescence to inform more abstract problem-solving. Finally, emerging literacy and numeracy skills at age six and seven evolve and become increasingly sophisticated as the child engages in school-based academic tasks, with the child moving from learning to read in the early elementary years to using reading skills to learn new information by the end of middle childhood, at age 11.

As in other periods, cognitive development influences the degree of the child's language capacity. For example, as children make gains in their information processing skills, particularly in the areas of selective attention and memory, they are better able to learn new words, integrate these words in sentences, and adhere to grammatical structures they have learned in school or conversationally. An important linguistic milestone between the ages of six through 11 is vocabulary growth, which typically increases to an average of 10,000 words during this period. By age nine to 11, children can also understand the double meaning of some words, such as when words are used metaphorically. For example, when given a sticker at school for good behavior that says "You are a shining star!" a child during this stage will understand that they have done a good job and are being compared to the brilliance of a star.

When one child's grandparents used to call him during his toddlerhood and preschool years, the child would stare into the telephone, saying a few words at times and talking somewhat reluctantly into the speaker. Around age six, this child appeared more comfortable using the phone and began to speak even more clearly on the phone between the ages of seven and eight. Children also make important advances in their conversational skills at this time, acquiring *shading* skills, or communication skills related to gradually changing the topic of the conversation (Berk, 2007). Whereas conversations with his grandparents used to involve the child answering a series of questions, during the stage from age six to 11, this child began to spontaneously offer his grandparents new information and ask questions of them that were relevant to their conversation. However, the extent of the child's vocabulary growth and other linguistic skills during this period will depend on cognitive abilities and will additionally vary by cultural context and societal norms.

Social-emotional and behavioral milestones

Childhood is also a time to develop mastery of self and others, including self-esteem, emotional regulation, perspective taking, moral development, and peer relationships. As children begin to compare themselves to others and receive feedback from teachers or other adults, *self-esteem*, or beliefs about self-worth, begins to drop in comparison to its higher levels during the toddler and preschool years. One day after coming home from school, a 10-year-old girl remarked to her mother, "I'm not good at dance anymore…so I'm not gonna go to class today." This surprised the mother, as typically her daughter loved her afternoon dance class and always wanted to practice her routines in front of others. After some questioning about this statement, her daughter said that she saw another group of girls practicing a popular dance at recess and felt she wasn't as good as those girls based on what she saw, and based on how positively her peers reacted to this display. This 10-year-old's self-esteem was modified through her interactions in the social world, which holds more weight than in previous years.

Self-esteem during this period is increasingly based on the child's self-perceived competence or peer group status, or through identification with primary caregivers, teachers, and other youth (Schaffer & Kip, 2010). Cultural factors and gender differences influence both the development of self-esteem and the degree to which children make social comparisons to others. For example, children from Asian cultures have been found to have lower self-esteem despite higher mastery of various academic tasks. Girls in North America have also demonstrated lower levels of self-esteem during this period compared to boys.

The need for self-control increases during this developmental stage as children engage in purposeful actions that are often in larger groups (such as formal schooling). This engagement requires two important self-control skills: *delay of gratification* and *impulse control*. Whereas a very young child wants immediate gratification, between the ages of six and 11, children learn to wait for a reward, engage in activities other than play, and conform behavior to the norms of the peer group and context. In part this is facilitated by watching peers use self-control. Self-control also varies by temperament—some children are better able to control desires and impulses than others regardless of what peers do or specific reward structures.

Children between the ages of six and 11 are even more aware of gender stereotypes and roles than in previous developmental periods. Exploration of gender roles occurs during this period, with youth increasingly identifying with same-sex role models, whether peers, caregivers, relatives, teachers, or celebrities. This developing sense of gender identity can also impact self-concept and facilitate gender socialization. Although girls and boys can certainly have cross-gender friendships between the ages of six and 11, a look around an elementary school recess yard will show that groups of children are generally gender-segregated,

Sri Lankan children playing in a beach
(Photo: Dhammika Heenpella)

with girls and boys separately playing or talking together in same-gender groups. Groups of girls may stand around and socialize more frequently than engaging in a game of sports or tag, for example, while at recess, which is what many boys prefer to do while on a break during their school day. Such gender segregation has been consistently found across cultures as well.

Emotional development and regulation continues during middle childhood, both of which are facilitated by simultaneous advances in cognitive and linguistic domains. Beginning at age eight, children start to realize they can experience more than one emotion at once, and also become more adept at appraising the range and combinations of emotions in others. Although children become aware of emotions such as pride, shame, guilt, and embarrassment during the preschool years, awareness of these more complex emotions becomes more sophisticated and children change their behavioral responses to such emotions as they develop in their maturity. When a three-year-old doesn't get to play with a certain toy she wants, she may scream and cry out of frustration. Her mother may realize that the three-year-old is not only upset but is also over-tired and needs to take a nap. An 11-year-old in middle childhood may become similarly upset when she doesn't get to stay up as late as older siblings to watch a television program, but may have a better understanding that she is also tired and has to get up early for school the next day. The 11-year-old will not typically scream and cry because she isn't getting what she wants and may be able to go to bed after some discussion about this instead of arguing with her parents (although in adolescence, arguing with caregivers may be a more probable outcome).

During this period, children also learn to regulate and manage their emotions and behavioral responses through two types of adaptive coping strategies, which most children use by about age 10. Although it is unlikely that the 11-year-old in the example above will need to employ coping strategies to regulate her upset about not staying up late, this same child will likely draw upon coping skills when she finds out that she hasn't been invited to the birthday party of a popular girl at school. *Problem-focused coping* occurs when children identify if the issue they are facing is changeable or not, think about possible solutions, and then carry out their chosen solution. The 11-year-old in this case thinks about asking if she can attend the party anyway, or contemplates telling a friend who was invited to ask the birthday girl why the 11-year-old didn't receive an invitation. However, these options don't feel comfortable to the 11-year-old. When this type of problem-focused coping strategy does not work or is not applicable, children typically engage in *emotion-centered coping*, which involves the child working to manage or control distressing responses through different strategies, such as seeking social support when problems cannot be immediately solved. The 11-year-old decides to talk to another friend about the party and tell the friend how she feels; their talk about this over the phone makes the 11-year-old feel better about not receiving an invitation to the party.

Empathy is another complex emotional state that continues to develop during this period. Children become more sophisticated in their ability to think about the thoughts or emotions of others, showing increased *perspective taking* that also informs their capacity to demonstrate empathy. They can simultaneously think about their own thoughts and feelings at the same time as they appraise and empathize with the thoughts and feelings of others and, by age 10, they start to

recognize the views of an impartial third party as well. In the example above, when the 11-year-old girl calls her friend to seek support due to her being excluded from a birthday party, the friend she calls is able to empathize with her friend's distress, examine her own feelings about the party and discuss what the birthday girl is likely to be thinking and feeling by not inviting everyone to the party.

Moral development during this period is also related to the development of children's empathy, in that youth are increasingly able to integrate the perspectives of others into their worldview and sense of morality. Children's *moral views*, or sense of "wrong" versus "right," during this stage are typically rule-governed, reflecting a heightened awareness of societal or cultural norms, laws, and customs. However, children's moral development is also dependent upon immediate environmental contexts and interactions they see in their families and neighborhood, even if these differ or are deviant in comparison to larger societal/cultural laws and customs. *Normative beliefs*, or the child's beliefs about the bounds of appropriate behavior, can vary substantially based on children's exposure to aggressive or deviant behavior, with the development of normative beliefs in early childhood predicting the extent of youths' aggressive behavior during later childhood (Huesmann & Guerra, 1997).

An increased focus on rules and laws also impacts on children's peer relationships and chosen play activities between the ages of six and 11. During this period, children form friendships on the basis of trust in one another, kindness, support and a mutual enjoyment of similar hobbies or activities. Many children become involved in rule-oriented games, such as sports or activities that require planning or strategy, and children sort themselves into various peer groups during free play activities. Children at this age who behave in a prosocial and non-aggressive manner are usually more popular or socially accepted than those who are either aggressive or socially withdrawn and awkward.

Peer victimization or bullying also begins to occur more frequently during this period. Typically, bullies are socially rejected, aggressive children who physically or verbally target and attack victims who are less assertive, physically weaker, and usually socially withdrawn, or those who exhibit marked differences from peers in their physical or other characteristics. Categories of bullies and victims are not mutually exclusive as many victims can bully others and vice versa, resulting in a bully-victim category of youth who engage in both of these behaviors (Cook et al, 2010). For example, one eight-year-old boy is constantly pushing another same-aged peer around on the playground. This eight-year-old is taller and stronger than the smaller eight-year-old that he pushes around, often allowing the bullying eight-year-old to take the weaker child's money for lunch. Most of the other kids at school don't socialize with the eight-year-old bully, as he seems angry most of the time, and his behavior causes him to get in trouble frequently with the school principal. After he leaves school, the eight-year-old usually walks home through the same couple of neighborhood streets, and is almost always confronted by a bigger and stronger 11-year-old, who pushes the eight-year-old to the ground nearly every day, asking him for his lunch money. In this case, the eight-year-old who bullies on the playground is also a victim of bullying by an older child.

As children continue to physically mature, sexual curiosity and self-exploration also continues, within the bounds of age-appropriate behavior, as

Table A.2.3 Developmental milestones in childhood: Age six to 11 years

Cognitive and linguistic milestones: Gains in information processing	Social-emotional and behavioral milestones: Development of self and others mastery
• Better self-control and use of divided, focused, and *selective attention* • *Gist-based memory*: Basic components of what was learned or what happened • Better use of skills to improve or increase memory, and *automatization* • Time and spatial orientation and organization: Differentiation of right from left • *Seriation* and categorization of objects • Increasing capacity for processing auditory and visual information • Development of *metacognition*, or "thinking about thinking," and *cognitive self-regulation*, the process of monitoring one's thoughts and actions. • Emergency of more sophisticated literacy and numeric skills • Vocabulary growth: Up to 10,000 words • Understanding the double meaning of words and metaphors • Advances in conversational skills: Acquirement of *shading* skills, related to gradually changing the topic of the conversation	• Self-esteem or beliefs about self-worth: – Diminution as a result of interpersonal comparison. – Based on perceived competence or peer group status, or identification with significant adults. – Influenced by cultural factors and gender differences. • Better self-control: – Related to delay of gratification and impulse control. – Facilitated by watching peers use self-control. – Influenced by child temperament. • Greater awareness of gender stereotypes and roles: – Developing sense of *gender identity* can impact self-concept and facilitate gender socialization. – Social groups are generally gender-segregated. • Increasing emotional development, regulation, and coping: – Problem-focused coping: Based on trying to solve the problem. – Emotion-centered coping: Based on trying to manage or control distressing responses. • Progress in empathy and moral development: Due to increases in children's perspective taking abilities. • Friendships based on the trust in one another, kindness, support and mutual enjoyment of similar hobbies or activities. • Peer victimization begins to occur. • Sexual and/or romantic interests may begin to develop at this stage.

described above in the toddlerhood and preschool years' section. Although males and females at this age typically sort themselves into same-sex peer groups, sexual or romantic interests may begin to develop at this stage, although these interests become more overt with the onset of puberty, in adolescence.

Childhood at a glance

As children develop, between the ages of six and 11, they negotiate critical milestones related to their entrance into the social world, summarized in Table A.2.3. Between these ages, children work to develop a sense of mastery over academic and social domains and become more interested in and involved in their peer group. By the end of this period, the cognitive, linguistic, social-emotional, and behavioral changes youth have made prepare them for their transition to adolescence and their development of personal identity during this period.

NORMAL DEVELOPMENT IN ADOLESCENCE: AGE 12 TO 18 YEARS

Adolescence has long been thought of as a time of change across multiple domains, particularly in the physical and social-emotional realms. With pubertal

changes beginning for most children at age 11, hormonal changes impact youths' functioning and negotiation of developmental milestones in the areas of cognition and language, as well as in their social-emotional skills and behavior. Adolescence also marks a shift from a relatively equal focus on both caregivers and peers, to increased attention on the peer group. Adolescence also is a period when youth may increase in their risk-taking behavior and experimentation (Guerra & Bradshaw, 2008), and become more susceptible to peer influences. Overall, adolescence is a period that prepares youth for the transition into adulthood and the formulation of their adult identity (Erikson, 1968).

Cognitive and linguistic milestones

Cognitive milestones between the ages of 12 and 18 can be characterized by the adolescent's growing self-consciousness and *metacognition*, or increased attention to and awareness of their own thought processes. During this time, adolescents are increasingly self-focused and may also improve in their cognitive self-regulation strategies. However, due to the hormonal changes that come with the onset of puberty, despite their greater sophistication in complex reasoning and formal mental operations, adolescents may also become more impulsive and less attentive at times, and may also struggle to effectively make decisions and plan for the consequences of their behavior.

Cognitive distortions about the self also appear with adolescents' increased self-consciousness—called the *imaginary audience* and defined as a belief that they are the main focus of other people's attention (Berk, 2006). Consider this example. Before leaving the house for a family holiday party, a mother tells her 13-year-old son and 15-year-old daughter that they have to wear some of their nicest clothes, and suggests her daughter wear a new long dress and her son wear the sweater his grandmother gave him. When the family is ready to leave, the 15-year-old comes downstairs wearing a short dress and lots of makeup, which her mother asks her to remove. The 15-year-old becomes immediately upset, arguing with her mother and exclaiming that the long dress is "babyish" and that "*everyone* will notice that I'm not allowed to wear makeup!" Shaking her head, the mother instructs her daughter to go back upstairs, take off her makeup and change into the longer dress. When her 13-year-old son comes down, she is equally surprised to see he isn't wearing the sweater and wants to wear his basketball jersey instead. Her son tells her that, "*all* of the other cousins get to wear their jerseys and *all* of them will see this dumb sweater and make fun of me!" The mother wonders how her children became so self-involved; her kids never acted like this when they were younger.

Click on the picture to view a short video (12:02) on developmental theorist Eric Erikson's stages of psychosocial development.

Another common cognitive distortion of this period is the *personal fable*, a result of the imaginary audience. Thinking of themselves as the center of attention, adolescents come to believe that to be the case because they are special and unique. Thanks to this personal fable, young adolescents also believe that their feelings and emotions are different, often more intense and terrible, than those of others. It is quite common for an upset teenager to exclaim to family members that they will "*never* understand" how the teenager feels. The personal fable may also give rise to a sense of invulnerability and singularity, creating a propensity for behavioral risk-taking. For example, a 15-year-old adolescent who is experimenting with drugs and alcohol might think, "other people will get hooked on drugs but not me," or a 16-year-old girl who is engaging in high risk sexual practices can think "other

women will get pregnant or get infected with HIV, but that stuff would never happen to me."

Despite these cognitive distortions and difficulties with rational decision-making and impulsivity, teenagers become more advanced in their performance of mental operations and their information-processing skills and cognitive self-regulation improve overall. Important cognitive milestones in this regard include greater planning and problem-solving abilities, abstract thinking and reasoning, and the capacity to understand, compare, or integrate advanced theoretical perspectives.

The majority of linguistic advances in adolescence are a continuation of previous milestones, such as vocabulary growth in middle childhood, and the refinement of grammatical structures. The adolescent's vocabulary can grow to over 40,000 words by age 18, and will likely include a number of abstract terms, with adolescents mastering the syllable stress and intonation of these more difficult words (Berk, 2006). With their improvements in vocabulary and grammatical skills, by age 18 adolescents can typically read and understand adult literature. Finally, adolescents evidence skill improvement in the area of pragmatics. By age 14, adolescents will use and understand conversational nuances, such as sarcasm or irony, and by age 18, their communication patterns are increasingly patterned according to specific contextual cues or societal expectations across a variety of environmental situations.

Social-emotional and behavioral milestones

Adolescents are more self-aware and self-conscious than younger children and may engage in more frequent risk-taking or experimentation behaviors (Guerra & Bradshaw, 2008), particularly when encouraged to do so by peers. Social-emotional and behavioral development during this period are characterized by a struggle to assert one's own identity and autonomy, although often in a context that maintains dependence on caregivers for basic needs (food, clothing, finances, transportation). Over the course of adolescence, youth negotiate many milestones related to social-emotional and behavioral development, all in preparation for the transition to adulthood.

With greater self-awareness and self-discovery in adolescence comes marked fluctuation in the adolescent's self-esteem, emotional regulation, and overall identity formulation. Adolescents have increased self-esteem or an inflated sense of self-importance and uniqueness at times, but also tend to experience more frequent self-criticism, sadness and anger. The intensity of such high and low emotional experiences is linked to adolescents' hormonal changes during puberty, to their growth in metacognition and to the increase in the dimensionality of self-esteem, which now includes academic or work performance, social competencies, peer relationships and romantic relationships and appeal.

Mild to moderate variations in mood and behavior are normal and to be expected. A teenager may come home one day in a good mood after doing well on a test, act cheerfully and talk with his mom about his day. Two days later, the very same teenager may be irritable, ignore his family and refuse to talk to his mother at all, only to be very pleasant at dinner, leaving his mother completely confused. It may be that he had a fight with a girlfriend, who called to apologize before dinner, or any number of momentary disappointments.

The desire to fit in or conform to the standards of one's clique or peer group becomes more marked during early adolescence.

Unfortunately, this type of moodiness is common among adolescents, which can lead to frequent disagreements with others, most often primary caregivers. Disagreements with parents typically increase between the ages of 12 and 14, but by age 18 adolescents usually exhibit less moodiness and engage in fewer disagreements with caregivers, on average.

In terms of peer relationships, youth tend to sort themselves into selective groups or *cliques* between the ages of 12 and 18, with each clique exhibiting different group norms, attitudes and value systems. The importance of *peer group conformity* also emerges during early adolescence. The desire to fit in or conform to the standards of one's clique or peer group is more apparent in younger adolescents between the ages of 12 and 14, as these youth tend to look to the peer group for direction in their dress, choice of recreational activities and taste in various media (movies, TV, music), all of which are shorter-term behaviors and features of identity. One father is confused by his 14-year-old daughter's new tastes and clothing style; all of a sudden she dresses in all black, exactly like two of her peers, and asks repeatedly whether she can dye her hair purple. The music coming from her room sounds different than it used to and the father notices that his daughter has started to paint her nails black as well. When asked about her new taste in clothes and music, the daughter appears annoyed and tells her dad that she's becoming her "own person". Her father teases that she looks like a carbon copy of her friends and the 14-year-old becomes even more upset, telling her dad that he just doesn't understand her and that she is more "alternative" than any of her peers.

Six months later, the 14-year-old visits her older cousin and comes back wearing a new flower-print top, brightly colored jewelry, and pink nail polish. "What happened to all the black?" her father asks. The 14-year-old rolls her eyes, tells her father that "black is so over" and continues in her new style of dress for the rest of the year, which her friends soon conform to as well. However, by the age of 18, the father notices that his daughter's "style" and tastes have solidified

and fluctuate much less than earlier in adolescence. At 18, when his daughter looks back at pictures of herself in all black, she laughs and says she remembers how important it was for her to dress exactly like her friends or her older cousin.

Such peer influences, like taste in clothing or music, usually do not conflict with the adolescent's preexisting moral beliefs and attitudes, although some peer group norms may be more deviant than others. For example, aggressive youth may sort themselves into antisocial peer groups that are involved in delinquent behavior. Some adolescents may join a formal street gang, or may just hang out with other peers who enjoy similar antisocial behaviors, such as "tagging" or putting graffiti on public buildings, drinking alcohol or using drugs. These antisocial peer groups can also influence less aggressive youth that join such groups in a process called *deviancy training*, in which aggressive or delinquent peers mutually "train" or socially reinforce the development of antisocial behavior in one another or in less aggressive youth with whom they associate (Dishion et al, 1996; Poulin et al, 1999). For example, a less deviant adolescent who occasionally associates with a group of more antisocial peers, may receive social praise, physical protection from other aggressive youth, or invitations to exclusive parties after he steals his parents' alcohol to bring to his peers, all of which reinforce his developing problem behavior. *Peer pressure* to conform to peer group norms or behaviors also influences adolescents' involvement in both prosocial and antisocial behavior, depending on the nature of the peer group, although peer pressure and influence decrease somewhat in strength by age 18, when personal identity and moral beliefs become more solidified (but not yet stable).

Deficits in adolescents' rational decision-making skills and increases in impulsivity during this time can lead to greater experimentation in general problem behaviors, such as cutting school or persistent truancy, drug and alcohol use and abuse, sexual-risk taking, and acts of violence or aggression (Guerra & Bradshaw, 2008), especially when taking part in such behaviors is sanctioned by the adolescent's peer group. In the example above, the adolescent is more likely to steal alcohol from his parents to give to his friends because his peer group often drinks together. For this reason, many prevention programs occur in middle and high schools to address this universal increase in problem behavior. However, involvement in problem behaviors will depend a great deal on the adolescent's individual and group-based social and environmental differences. Bullying also continues during adolescence, although it is less physical in nature when compared to bullying in middle childhood.

A 15-year-old girl sits at her computer and starts to cry quietly, shaking her head at the screen and trying to close her web browser quickly before her older, 20-year-old sister walks over to see what is going on. The 15-year-old looks down, appears embarrassed, and finally admits that a boy she had liked posted a picture of her on a social networking site that he had taken on their first date together. Although the picture was not sexually explicit, he wrote some suggestive comments under the photo that insinuated that they had "gone all the way" together, which was not true. Another girl in the 15-year-old's peer group had commented on the post and called the 15-year-old some derogatory names, leading others to do the same, all based on the rumor that the boy's social networking post had started. This type of event is indicative of the peer victimization that can take place during adolescence: it may become sexualized in nature, may occur indirectly and is more

likely to take place while teens use the internet (called cyberbullying; Williams & Guerra, 2007).

Victimization in adolescence may also be more social or relationally focused in content, reflecting *relational* or *verbal* as opposed to *physical aggression.* Further, whereas deviant or aggressive peers were once rejected in childhood, these youth can sometimes become popular in adolescence. For example, the above situation in which an adolescent steals alcohol from his parents could lead to increased respect from others in his peer group and could increase his popularity at school. However, popular adolescents typically continue to reject highly antisocial youth, and friendship quality between youth usually depends on prosocial characteristics, like mutual trust, loyalty and support. If the adolescent stealing alcohol had also forced another adolescent to drink the alcohol until he or she passed out, the larger and more popular peer group would likely reject this adolescent and his more deviant behavior.

As adolescents work to develop their identity, they may reach a greater understanding of their own moral beliefs, and continue to improve in their perspective-taking abilities. Adolescents will also behave more in accordance with their personal value system over time, which can include religious, cultural, and other influences apart from those of the peer group, particularly as they near age 18. However, social-emotional and behavioral development does not conclude with adolescence and continues to inform identity development in early adulthood.

Table A.2.4 Developmental milestones in adolescence: Age 12 to 18 years

Cognitive and linguistic milestones: Complex reasoning and formal mental operations	Social-emotional and behavioral milestones: Assertion of one's identity and autonomy
• Improvement of information-processing skills, metacognition, and cognitive self-regulation strategies • Growth in self-consciousness and cognitive distortions • Imaginary audience: Belief that they are the main focus of other people's attention • Personal fable: Belief that one's experiences and feelings are unique from others • Difficulty with rational decision-making and impulsivity • Vocabulary growth (over 40.000 words by age 18) and refinement of grammatical structures • Progress in conversational skills.	• Frequent and intense fluctuation in self-esteem and emotional experiences linked to hormonal changes • Self-esteem increases in dimensionality: Academic or work performance, social competencies and peer relationships, romantic relationships and/or appeal, etc. • Mild to moderate variations in mood and behavior: – Normal and to be expected – Can lead to frequent disagreements with others, especially primary caregivers • Importance of *peer group conformity*: – Adaptation to the group norms, attitudes, and value systems – Possible processes of *deviancy training* and peer pressure • More likely to participate in risk behaviors: drug and alcohol use and abuse, acts of violence and aggression, bullying behavior, etc. • Peer victimization becomes more social or relationally focused in content • Friendship quality depends on prosocial characteristics such as mutual trust, loyalty, and support • Greater understanding of their own moral beliefs • Improvement in their perspective-taking abilities.

In many traditional societies, the transition from childhood or adolesence to adhulthood is usually accompanied by culture-specific rituals. Although there is great variation across cultures, there is a tendency to mark children's rupture with their previous life through various rites of passage or shifts in the individual's social behavior, which demarcate the beginning of adulthood. For example, within the Kurnai community in Australia, a boy's relationship with his mother changes considerably from the moment he is recognized as a man, as he has to give up his childhood games and take on different responsibilities. Also common to Aboriginal Australian communities is the rite of passage called a "walkabout," in which adolescent males separate from their tribe and live in the wilderness for a period of time, marking the transition to adulthood, among other shifts at this time.

Similarly, in modern societies one may find activities that resemble these rites of passage, although modern rites of passage may be markedly different in nature. For example, the numerous exams and the multiple admission tests that many adolescents have to endure in order to gain entrance to college or graduate school may constitute an initiation into adult society. In the same way, for some cultures it is common to celebrate such academic achievements through graduation parties after the adolescent completes different stages of his or her studies (such as high school). Religious ceremonies, such as the Bar or Bat Mitzah in Judaism, or the Confirmation in Catholicism, may also mark the passage from chilhood to adulthood. In Hispanic/Latino communities, the "Quinceañera," a celebration at age 15 that represents the entry of young girls into adulthood, is when girls gain certain social privileges, such as going to dances, watching more adult movies, using makeup, and having a significant other. These rites of passage and markers of the transition from adolescence to adulthood vary substantially both across and within various cultures and racial/ethnic groups. Practitioners and other healthcare providers should be aware of the culture and context in which their clients are embedded and should practice cultural sensitivity, both when examining adolescent transitions to adulthood and when considering the previous developmental stages.

Adolescence at a glance

Normal adolescent development across cognitive, linguistic, social-emotional, and behaviors domains reflects the child's increased involvement in the social world, growing sense of identity, and preparation for the transition to adulthood. Common patterns in adolescent development include the development of higher-order cognitive and linguistic skills, an initial increase in moodiness, caregiver-child conflict, and conformity with group norms, with a decrease in these behaviors by age 18. Although identity and social roles do not solidify during this stage, the milestones that occur in adolescence greatly inform later adult functioning across multiple developmental domains.

CONCLUSIONS

It is important to understand the timing and progression of normal developmental milestones throughout the periods of infancy, childhood and adolescence, and within cognitive, linguistic, social-emotional and behavioral domains. Normal development is defined as not only the absence of psychopathology, but also the negotiation of important milestones in a timely fashion. However, the definition of "normal" development must always be contextualized according

Other useful Internet resources

- Centers for Disease Control and Prevention
- University of Michigan Health System (with videos and information in Spanish)
- Child & Family Webguide – Tufts University
- Child Developmental Institute
- Palo Alto Medical Foundation (information available in English and Spanish)
- Medline Plus: Trusted Health Information for You
- National Institute Of Child Health and Human Development
- Center of the Developing Child

to the myriad of racial, ethnic, cultural and environmental differences that exist both within and across different groups of youth. For mental health professionals, this review of normal development can assist in history-taking and assessment, treatment planning and the appropriate choice of evidence-based and developmentally appropriate interventions. Although deviations from average or on-time development are not specifically discussed in this chapter, other chapters in this volume provide thorough information about the presentation of and evidence-based treatments for various physical and mental health disorders that occur in youth. The applied professional is encouraged to use the following discussions of atypical behavior as well as this chapter's review of normal development to inform future conceptualizations of youths' functioning during infancy, childhood and adolescence.

REFERENCES

Ahadi SA, Rothbart MK (1993). Children's temperament in the US and China: Similarities and differences. *European Journal of Personality,* 7: 359-377.

Ainsworth M (1979). Infant-mother attachment. *American Psychologist,* 34:932-937. doi: 10.1037/0003-066X.34.10.932.

Berk LE (2007). *Development through the Lifespan*, 4th edition. Boston, MA: Pearson Education, Inc.

Berk LE (2006). *Child Development*, 7th edition. Boston, MA: Pearson Education, Inc.

Broesch T, Callaghan T, Henrich J et al (2010). Cultural variations in children's mirror self-recognition. *Journal of Cross-Cultural Psychology,* 42:1018-1029.

Cook CR, Williams KR, Guerra NG et al (2010). Predictors of bullying and victimization in childhood and adolescence: A meta-analytic investigation. *Journal of School Psychology,* 25:65-83. doi: 10.1037/a0020149.

Davies D (2004). *Child Development: A Practitioner's Guide.* New York, NY: Guilford Press.

Dishion TJ, Spracklen KM, Andrews DW et al (1996). Peer deviancy training in male adolescent friendships,' *Behavior Therapy,* 27:373-390. Doi: 10.1016/S0005-7894(96)80023-2.

Erikson E (1968). *Identity, Youth, and Crisis.* New York, NY: Norton.

Essex MJ, Armstrong JM, Burk LR et al (2011). Biological sensitivity to context moderates the effects of the early teacher-child relationship on the development of mental health by adolescence. *Development and Psychopathology,* 23:149-161.

Guerra NG, Bradshaw CP (2008). Linking the prevention of problem behaviors and positive youth development: Core competencies for positive youth development. In Guerra NG, Bradshaw CO (eds) *New Directions for Child and Adolescent Development,* 122:1-17.

Hetherington EM, Parke RD, Gauvain M et al (2006). *Child Psychology: A Contemporary Viewpoint*, 6th edition. New York, NY: McGraw Hill.

Holmbeck GN, Devine KA, Bruno EF (2010). Developmental issues and considerations in research and practice, in Weisz JR, Kazdin AE (eds), *Evidence-Based Psychotherapies for Children and Adolescents,* New York, NY: The Guilford Press, pp28-39.

Huesmann RL, Guerra NG (1997) Children's normative beliefs about aggression and aggressive behavior. *Journal of Personality and Social Psychology,* 72:408-419.

McGue M (1994). Genes, environment and the etiology of alcoholism. In: Zucker R, Boyd G, Howard J (eds) *The Development of Alcohol Problems: Exploring the Biopsychosocial Matrix of Risk*, Washington, DC: National Institute on Alcohol Abuse and Alcoholism, pp1–40.

Markus HR, Kitayama S (1991). Culture and the self: implications for cognition, emotion, and motivation. *Psychological Review,* 98:224-253.

Meier MH, Slutske WS, Arndt S et al (2008). Impulsive and callous traits are more strongly associated with delinquent behavior in higher risk neighborhoods among boys and girls. *Journal of Abnormal Psychology,* 117:377-385.

Piaget J (1954). *The Origins of Intelligence in Children.* New York: International University Press.

Plomin R, McClearn GE, Smith DL et al. (1995). Allelic associations between 100 DNA markers and high versus low IQ. *Intelligence*, 21:31-48.

Poulin F, Dishion TJ, Haas E (1999). The peer influence paradox: Relationship quality and deviancy training within male adolescent friendships. *Merril-Palmer Quarterly*, 45:42-61.

Rogoff B (2003). *The Cultural Nature of Human Development.* Oxford: Oxford, University Press.

Rubin KH, Burgess KB, Hasting PD (2002). Stability and social-behavioral consequences of toddlers' inhibited temperament and parenting behaviors. *Child Development*, 73:483495.

Saudino KJ (2005). Behavioral genetics and child temperament. *Journal of Developmental Behavioral Pediatrics,* 26:214-223.

Seifer R, Schiller M, Sameroff AJ et al (1996). Attachment, maternal sensitivity, and infant temperament during the first year of life. *Developmental Psychology,* 32:12-25.

Shaffer DR, Kipp K (2010). *Developmental Psychology: Childhood and Adolescence*, 8th Edition. Belmont, CA: Wadsworth.

Steinberg, L 2010, 'Commentary: A behavioral scientist looks at the science of adolescent brain development,' *Brain and cognition,* vol. 72, no. 1, pp. 160-164. doi: 10.1016/jbandc.2009.11.003

Thomas A, Chess S (1977). *Temperament and Development.* New York: Brunner/Mazel.

Turkheimer E, Haley A, Waldron M et al (2003). Socioeconomic status modifies heritability of IQ in young children. *Psychological Science*, 14:623-628.

Tuvblad C, Grann M, Lichtenstein P (2006). Heritability for adolescent antisocial behavior differs with socioeconomic status: gene-environment interaction. *Journal of Child Psychology and Psychiatry,* 47:734-743.

Wachs TD (2006). The nature, etiology, and consequences of individual differences in Temperament. In Balter L, Tamis-Le Monda CS (eds) *Child Psychology,* second Edition. New York, NY: Psychology Press, pp 27-51.

Williams KR, Guerra NG (2007). Prevalence and predictors of Internet bullying. *Journal of Adolescent Health,* 41:S14-S21. doi: 10.1016/jadohealth.2007.08.018.

Wong MS, Mangelsdorf SC, Brown GL et al (2009). Parental beliefs, infant temperament, and marital quality: Associations with infant-mother and infant-father attachment. *Journal of Family Psychology*, 23:828-838.

Zeifman DM (2001). An ethological analysis of human infant crying: Answering Tinbergen's four questions. *Developmental Psychobiology,* 39:265-285.