Newborn Micah wailed, arms and legs flailing. “Why hello, you’re awake. Did you sleep well? Hungry?” his mother cooed as she picked Micah up and cradled him. Micah quickly learned the routine: he cried and his mother or father would hold him and comfort him. At 2 months of age, Baby Micah smiled at the sight of his parents and gurgled happily when held. In turn, Micah’s parents played with him and were delighted to see his animated, excited responses. As a toddler, his emerging language skills enabled Micah to express his needs in words. He quickly learned that words are powerful tools that can convey emotions (“I love you, Mommy”). Micah learned to use words to help him manage his emotions and reactions to challenging situations, such as when his parents drop him off at the child care center. When Daddy leaves, Micah says, “Bye Daddy! I’m going to play,” and distracts himself by singing. As Micah is increasingly able to express his ideas and feelings, he develops new and more complex relationships with the people around him.
As Micah illustrates, babies learn new ways of expressing their emotions in the first 2 years of life. They become capable of new and more complex emotions and develop a greater sense of self-understanding, social awareness, and self-management. These abilities influence their interactions with others and their emerging social relationships. These processes collectively are referred to as socioemotional development. In this chapter, we examine the processes of socioemotional development in infancy and toddlerhood.
PSYCHOSOCIAL DEVELOPMENT IN INFANCY AND TODDLERHOOD

According to Erik Erikson (1950), as we travel through the lifespan, we proceed through a series of psychosocial crises, or developmental tasks. As discussed in Chapter 1, how well each crisis is resolved influences psychological development and how the individual approaches subsequent developmental tasks. Erikson believed that infants and toddlers progress through two psychosocial stages that influence their personality development: trust versus mistrust and autonomy versus shame and doubt.

Trust Versus Mistrust

From the day she was born, each time Carla cried, her mother or father would come to her bassinet and hold her, check her diaper, and feed her if necessary. Soon, Carla developed the basic expectation that her parents would meet her needs. According to Erikson (1950), developing a sense of trust versus mistrust is the first developmental task of life. Infants must develop a view of the world as a safe place where their basic needs will be met. Throughout the first year of life, infants depend on their caregivers for food, warmth, and affection. If parents and caregivers attend to infants’ physical and emotional needs and consistently fulfill them, infants will develop a basic sense of trust in their caregivers and, by extension, in the world in general.

However, if caregivers are neglectful or inconsistent in meeting infants’ needs, infants will develop a sense of mistrust, feeling that they cannot count on others for love, affection, or the fulfillment of other basic human needs. The sense of trust or mistrust developed in infancy influences how people approach the subsequent stages of development. Specifically, when interaction with adults inspires trust and security, babies are more likely to feel comfortable exploring the world, which enhances their learning, social development, and emotional development.

Autonomy Versus Shame and Doubt

Two-and-a-half-year-old Sarah is an active child who vigorously explores her environment, tests new toys, and attempts to learn about the world on her own. At dinnertime, she wants to feed herself and gets angry when her parents try to feed her. Each morning, she takes pleasure in attempting to dress herself and expresses frustration when her mother helps. Sarah is progressing through the second stage in Erikson’s scheme of psychosocial development—autonomy versus shame and doubt—which is concerned with establishing a sense of autonomy, or the feeling that one can make choices and direct oneself.

Toddlers walk on their own, express their own ideas and needs, and become more independent. Their developmental task is to learn to do things for themselves and feel confident in their ability to maneuver in their environment. According to Erikson (1950), if parents encourage toddlers’ initiative and allow them to explore, experiment, make mistakes, and test limits, toddlers will develop autonomy, self-reliance, self-control, and confidence. If parents are overprotective or disapprove of their toddlers’ struggle for independence, the children may begin to doubt their abilities to do things by themselves, may feel ashamed of their desire for autonomy, may passively observe, and may not develop a sense of independence and self-reliance.

Both trust and autonomy develop out of warm and sensitive parenting and developmentally appropriate expectations for exploration and behavioral control. Without a secure sense of trust in caregivers, toddlers will struggle to establish and maintain close relationships with others and will find it challenging to develop autonomy. Adjustment difficulties are more likely when children do not develop a sense of individuality and confidence in their own abilities to meet new challenges. Much of the research on parenting examines mothers, but infants’ interaction relationships with fathers also predict autonomy and social competence. This is true across cultures, and the accompanying Lives in Context feature looks at father–infant interactions.
Father–Infant Interactions

We know a great deal about the influence of mother–infant relationships on infant attachment and adjustment, but fathers are also part of the family system and infants also develop attachments to their fathers (Cabrera, Fitzgerald, Bradley, & Roggman, 2014; Lickenbrock & Braungart-Rieker, 2015). At birth, fathers interact with their newborns much like mothers do. They provide similar levels of care by cradling the newborn and performing tasks like diaper changing, bathing, and feeding the newborn (Combs-Orme & Renkert, 2009). This is true of fathers in Western contexts as well as those in non-Western contexts, such as the Kadazan of Malaysia and Aka and Bofi of Central Africa (Hewlett & MacFarlan, 2010; Hossain, Roopnarine, Ismail, Hashmi, & Sombuling, 2007; Tamis-LeMonda, Kahana-Kalman, & Yoshikawa, 2009b).

Early in an infant’s life, however, fathers and mothers develop different play and communicative styles. Fathers tend to be more stimulating, while mothers are more soothing (Feldman, 2003). Father–infant play is more physical and play oriented compared with the social exchanges centered on mutual gaze and vocalization that are characteristic of mother–infant play (Feldman, 2003). Fathers tend to engage in more unpredictable rough-and-tumble play that is often met with more positive reactions and arousal from infants; when young children have a choice of an adult play partner, they tend to choose their fathers (Feldman, 2003; Lamb & Lewis, 2016).

Across cultures, father–infant interaction tends to be play oriented, promotes close father–infant bonds, and promotes socioemotional development. ©iStockphoto.com/workLater1

Differences in mothers’ and fathers’ interaction styles appear in many cultures, including France, Switzerland, Italy, and India, as well as among White non-Hispanic, African American, and Hispanic American families in the United States (Best, House, Barnard, & Spicker, 1994; Hossain, Field, Pickens, Malphurs, & Del Valle, 1997. Roopnarine, Talukder, Jain, Joshi, & Srivastav, 1992). However, interaction styles differ more in some cultures than in others. For example, German, Swedish, and Israeli kibbutzim fathers, as well as fathers in the Aka ethnic group of Africa’s western Congo basin, are not more playful than mothers (Frodi, Lamb, Hwang, & Frodi, 1983; Hewlett, 2008; Hewlett, Lamb, Shannon, Leyendecker, & Scholmerich, 1998; Sagi et al., 1985). Furthermore, overall and across cultures, most of the differences between mothers and fathers are not large (Lamb & Lewis, 2016).

Father–child interaction is associated with social competence, independence, and cognitive development in children (Cabrera, Volling, & Barr, 2018; Sethna et al., 2016). Rough-and-tumble play contributes to advances in emotional and behavioral regulation in children (Flanders, Leo, Paquette, Pihl, & Séguin, 2009). Fathers provide opportunities for babies to practice arousal management by providing high-intensity stimulation and excitement, like tickling, chasing, and laughing. Fathers who are sensitive, supportive, and appropriately challenging during play promote father–infant attachment relationships (Grossmann et al., 2002; Lickenbrock & Braungart-Rieker, 2015). When fathers are involved in the caregiving of their infants, their children are more likely to enjoy a warm relationship with their father as they grow older, carry out responsibilities, follow parents’ directions, and become well adjusted. Similar to findings with mothers, sensitive parenting on the part of fathers predicts secure attachments with their children through age 3 (Brown, Mangelsdorff, & Neff, 2012; Lucassen et al., 2011). The positive social, emotional, and cognitive effects of father–child interaction continue from infancy into childhood and adolescence (Cabrera et al., 2018; Sarkadi, Kristiansson, Oberklaid, & Bremberg, 2008).

What Do You Think?

1. What are some of the challenges of studying father–child relationships? How might researchers address these challenges?

2. Why do you think fathers are more likely to be “play mates” than mothers?
EMOTIONAL DEVELOPMENT IN INFANCY AND TODDLERHOOD

What emotions do infants feel? Infants cannot describe their experiences and feelings, which makes studying their emotional development quite challenging. Most people, including infants, show their emotions on their faces, such as by smiling or frowning. If we use facial expressions as a guide to what emotions infants might feel, the first and most reliable emotion that newborns show is distress. They cry, wail, and flail their arms and bodies, alerting caregivers to their need for attention. Newborns also show interest with wide-eyed gazes when something catches their attention, and they smile when they are happy.

Infants’ Emotional Experience

Observation of newborns’ facial expressions suggests that they experience interest, distress, disgust, and happiness or contentment from birth or shortly after birth (Izard, Woodburn, & Finlon, 2010). Of course, we do not know whether internal emotional states accompany these facial expressions, but infants’ facial expressions are remarkably similar to those of adults (Sullivan & Lewis, 2003).

Basic Emotions

Basic emotions, also known as primary emotions (happiness, sadness, interest, surprise, fear, anger, and disgust), are universal, experienced by people around the world (Cordaro et al., 2018; Lench, Baldwin, An, & Garrison, 2018). Basic emotions emerge in all infants at about the same ages and are seen and interpreted similarly in all cultures that have been studied, suggesting that they are inborn (Izard et al., 2010). Between 2 and 7 months of age, infants begin to display anger, sadness, joy, surprise, and fear (Bennett, Bendersky, & Lewis, 2005).

Research with adults suggests that emotions are the result of interactions among richly connected, subcortical brain structures, including the brainstem and the limbic system, as well as parts of the cerebral cortex (Celeghin, Diana, Bagnis, Viola, & Tamietto, 2017; Kragel & LaBar, 2016). These structures develop prenatally and are present in animals, suggesting that emotions serve a biological purpose, are crucial to survival, and are likely experienced by infants (Rolls, 2017; Turner, 2014).

Emotions develop in predictable ways, as shown in Table 6.1. Although basic emotions are thought to be inborn, the ways that they are expressed and the conditions that elicit them change during the first few months of life. For example, in adults, smiling indicates happiness. Newborns smile, and smiling is one of the most important emotional expressions in infancy. Newborn smiles are reflexive, involuntary, and linked with shifts in arousal state (e.g., going from being asleep to drowsy wakefulness), and they occur frequently during periods of rapid eye movement (REM) sleep (Kawakami et al., 2008). At about 3 weeks, infants smile while awake and alert

**Table 6.1**

<table>
<thead>
<tr>
<th>APPROXIMATE AGE</th>
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| Birth           | Basic emotions  
Discriminates mother |
| 2–3 months      | Social smile  
Distinguishes happiness, anger, surprise, and sadness |
| 6–8 months      | Fear, stranger anxiety, and separation protest occur |
| 7–12 months     | Social referencing |
| 18–24 months    | Self-conscious emotions appear. Develops vocabulary for talking about emotions |
and in response to familiarity—familiar sounds, voices, and tastes (Sroufe & Waters, 1976).

During the second month of life, as infants’ vision improves, they smile more in response to visual stimuli—sights that catch their attention, such as bright objects coming into view (Sroufe, 1997). The social smile, which occurs in response to familiar people, emerges between 6 and 10 weeks of age and is an important milestone in infant development because it shows social engagement (Lewis, Hitchcock, & Sullivan, 2004; Messinger & Fogel, 2007). The social smile plays a large role in initiating and maintaining social interactions between infants and adults, especially by enhancing caregiver–child bonding. Parents are enthralled when their baby shows delight in seeing them, and the parents’ happy response encourages their baby to smile even more (Beebe et al., 2016).

As infants grow, laughs begin to accompany their smiles, and they laugh more often and at more things. Infants may show clear expressions of joy and intense happiness as early as 2½ months of age while playing with a parent and at 3 to 4 months of age in response to stimuli that they find highly arousing (Bornstein & Lamb, 2011). At 6 months of age, an infant might laugh at unusual sounds or sights, such as when Mommy puts a bowl on her head or makes a funny face. Laughing at unusual events illustrates the baby’s increasing cognitive competence as he or she knows what to expect and is surprised when something unexpected occurs. By a year of age, infants can smile deliberately to engage an adult.

Negative emotions change over time as well. Distress is evident at birth when newborns experience the discomfort of hunger, a heel prick, or a chilly temperature. Anger appears at about 6 months of age and develops rapidly, becoming more complex in terms of elicitors and responses (Lemerise & Dodge, 2008). Initially, physical restrictions such as being restrained in a high chair or when being dressed can elicit anger. The inability to carry out a desired act, such as unsuccessfully reaching to obtain a desired toy, can also provoke frustration and anger (Sullivan & Lewis, 2003). Between 8 and 20 months of age, infants gradually become more reactive, and anger is more easily aroused (Braungart-Rieker, Hill-Soderlund, & Karras, 2010). They become aware of the actions of others, so that anger can be elicited by others’ behavior. For example, an infant may become upset when Mommy goes to the door to leave or when Grandma takes out the towels in preparation for bath time. During the second year of life, temper tantrums become common when the toddler’s attempts at autonomy are thwarted and he or she experiences frustration or stress. The anger escalates with the child’s stress level (Portegel, Robison, Anderson, Jordan, & Shapiro, 2007). Some toddlers show extreme tantrums, lie on the floor, scream, and jerk their arms and legs. Other children’s tantrums are more subtle. They may whine, mope, and stick out their lower lip.

**Self-Conscious Emotions**

Emotional development is an orderly process in which complex emotions build on the foundation of simple emotions. The development of self-conscious emotions, or secondary emotions—such as empathy, pride, embarrassment, shame, and guilt—depends on cognitive development, as well as an awareness of self. Self-conscious emotions do not begin to emerge until about 15 to 18 months, and they largely develop during the second and third years of life (Goodvin, Thompson, & Winer, 2015). To experience self-conscious emotions, toddlers must be able to have a sense of self, observe themselves and others, be aware of standards and rules, and compare their behavior with those standards (Lewis, 2016). Feelings of pride, for example, arise from accomplishing a personally meaningful goal, whereas guilt derives from realizing that one has violated a standard of conduct. Parental evaluations are the initial basis for many secondary emotions (Stipek, 1995).

**Emotion Regulation**

As children become aware of social standards and rules, emotion regulation—the ability to control their emotions—becomes important. How do infants regulate emotions? Very young infants have been observed to manage negative emotions by sucking vigorously on objects or turning their bodies away from distressing stimuli (Mangelsdorf, Shapiro, & Marzolf, 1995).

Smiling is also thought to serve a purpose in regulating emotions, as it allows the infant to control aspects of a situation without losing touch with it. When an infant gets excited and smiles, she looks
away briefly. This may be a way of breaking herself away from the stimulus and allowing her to regroup, preventing overstimulation. Smiling is associated with a decline in heart rate, suggesting that it is a relaxation response to decrease an infant’s level of arousal.

Whereas 6-month-old infants are more likely to use gaze aversion and fussing as primary emotion regulatory strategies, 12-month-old infants are more likely to use self-soothing (e.g., thumb sucking, rocking themselves) and distraction (chewing on objects, playing with toys). By 18 months of age, toddlers actively attempt to change the distressing situation, such as by moving away from upsetting stimuli, and begin to use distraction, such as by playing with toys or talking (Crockenberg & Leerkes, 2004; Feldman, Dollberg, & Nadam, 2011).

After 18 months of age, toddlers’ vocabulary for talking about feelings develops rapidly, and their ability to tell caregivers how they feel presents new opportunities for emotion regulation (Bretherton, Fritz, Zahn-Waxler, & Ridgeway, 1986). Vocabulary predicts self-regulation abilities in 24-month-old infants (Valotton & Ayoub, 2011). In one longitudinal study of children from 18 to 48 months, toddlers with better language skill tended to engage in more support seeking and distracted themselves more, which was linked with showing less anger at 48 months (Roben, Cole, & Armstrong, 2013). Researchers have also found that infants’ abilities to self-regulate at 15 months predict executive functioning at 4 years (Ursache, Blair, Stifter, Voeltgeline, & The Family Life Project Investigators, 2013).

Social Interaction and Emotional Development

Infants and young children often need outside assistance in regulating their emotions. Warm and supportive interactions with parents and other caregivers can help infants understand their emotions and learn how to manage them.

Parental Interaction

Responsive parenting that is attuned to infants’ needs helps infants develop skills in emotion regulation, especially in managing negative emotions like anxiety, as well as their physiological correlates, such as accelerated heart rate (Feldman et al., 2011). For example, sensitive responses coupled with soft vocalizations aid 3-month-old infants in regulating distress (Spinelli & Mesman, 2018). Likewise, when mothers responded promptly to their 2-month-old infants’ cries, these same infants, at 4 months of age, cried for shorter durations, were better able to manage their emotions, and stopped crying more quickly than other infants (Jahromi & Stifter, 2007).

Parents help their infants learn to manage emotions through a variety of strategies, including direct intervention, modeling, selective reinforcement, control of the environment, verbal instruction, and touch (Waters, West, Karnilowicz, & Mendes, 2017). These strategies change as the infants grow older. For example, touching becomes a less common regulatory strategy with age, whereas vocalizing and distracting techniques increase (Meléndez, 2005). When mothers provide guidance in helping infants regulate their emotions, the infants tend to engage in distraction and mother-oriented strategies, such as seeking help, during frustrating events (Thomas, Letourneau, Campbell, Tomfohr-Madsen, & Giesbrecht, 2017).

Parent-infant interactions undergo continuous transformations as infants develop. For example, infants’ growing motor skills influence their interactions with parents, as well as their socioemotional development. Crawling, creeping, and walking introduce new challenges to parent-infant interaction and socioemotional growth (Adolph & Franchak, 2017). As crawling begins, parents and caregivers respond with happiness and pride, positive emotions that encourage infants’ exploration. As infants gain motor competence, they wander further from parents (Thurman & Corbetta, 2017). Crawling increases a toddler’s capability to attain goals—a capability that, while often satisfying to the toddler, may involve hazards.

As infants become more mobile, emotional outbursts become more common. Parents report that advances in locomotion are accompanied by increased frustration as toddlers attempt to move in ways that often exceed their abilities or are not permitted by parents (Clearfield, 2011; Pemberton Roben et al., 2012). When mothers recognize the dangers posed to toddlers by objects such as houseplants, vases, and electrical appliances, they sharply increase their expressions of anger and fear, often leading to fear and frustration in their
toddlers. At this stage, parents actively monitor toddlers’ whereabouts, protect them from dangerous situations, and expect them to comply—a dynamic that is often a struggle, amounting to a test of wills. At the same time, these struggles help the child to begin to develop a grasp of mental states in others that are different from his or her own.

Changes in emotional expression and regulation are dynamic because the changing child influences the changing parent. In particular, mothers and infants systematically influence and regulate each other’s emotions and behaviors. Mothers regulate infant emotional states by interpreting their emotional signals, providing appropriate arousal, and reciprocating and reinforcing infant reactions. Infants regulate their mother’s emotions through their receptivity to her initiations and stimulation and by responding to her emotions (Bornstein, Hahn, Suwalsky, & Haynes, 2011; Bornstein, Suwalsky, & Breakstone, 2012). By experiencing a range of emotional interactions—times when their emotions mirror those of their caregivers and times when their emotions are different from those of their caregivers—infants learn how to transform negative emotions into neutral or positive emotions and regulate their own emotional states (Guo, Leu, Barnard, Thompson, & Spieker, 2015).

Social Referencing

Early in life, the ability emerges to discriminate facial expressions that indicate emotion. In one study, 2-day-old infants initially did not show a preference for a happy or disgust face, but after being habituated to either a happy or disgust face, they successfully discriminated between the two, suggesting an early sensitivity to dynamic-faced expressions of emotions (Addabbo, Longhi, Marchis, Taillabue, & Turati, 2018). Likewise, newborns are able to discriminate happy faces from fearful ones (Farroni, Menon, Rigato, & Johnson, 2007). It is thought that infants are innately prepared to attend to facial displays of emotion, because such displays are biologically significant and the ability to recognize them is important for human survival (Leppanen, 2011). Between 2 and 4 months of age, infants can distinguish emotional expressions, including happiness as opposed to anger, surprise, and sadness (Bornstein, Arterberry, & Lamb, 2013). Infants 6½ months old can identify and match happy, angry, and sad emotions portrayed on faces but also body movements indicating emotion (Hock et al., 2017).

Beyond recognizing the emotional expressions of others, infants also respond to them. Between 6 and 10 months of age, infants begin to use social referencing, looking to caregivers’ or other adults’ emotional expressions to find clues for how to interpret ambiguous events, which influences their emotional responses and subsequent actions (Walle, Reschke, & Knothe, 2017). For example, when a toddler grabs the sofa to pull herself up, turns, and tumbles over as she takes a step, she will look to her caregiver to determine how to interpret her fall. If the caregiver has a fearful facial expression, the infant is likely to be fearful also, but if the caregiver smiles, the infant will probably remain calm and return to attempts at walking. The use of social referencing is one way that infants demonstrate their understanding that others experience their own emotions and thoughts.

Older infants tend to show a negativity bias when it comes to social referencing. That is, they attend to and follow social referencing cues more closely when the cues indicate negative attitudes toward an object, compared with neutral or happy attitudes (Vaish, Grossmann, & Woodward, 2008). In addition, infants may be more influenced by the vocal information conveyed in emotional messages than the facial expressions themselves, especially within the context of fearful messages (Biro, Alink, van IJzendoorn, & Bakermans-Kranenburg, 2014).

How infants employ social referencing changes with development. Ten-month-old infants show selective social referencing. They monitor the caregiver’s attention and do not engage in social referencing when the adult is not attending or engaged (Stenberg, 2017). At 12 months, infants use referential cues such as the caregiver’s body posture, gaze, and voice direction to determine to what objects caregivers’ emotional responses refer (Brooks & Meltzoff, 2008). Twelve-month-old infants are more likely to use a caregiver’s cues as guides in ambivalent situations when the caregiver responds promptly to the infants’ behavior (Stenberg, 2017). In sum, social referencing reflects infants’ growing understanding of the emotional states of others; it signifies that infants can observe, interpret, and use emotional information from others to form their own interpretation and response to events.

Cultural Influences on Emotional Development

As we’ve already seen, emotional development does not occur in a vacuum. Contextual factors, such as culture, influence how infants interpret and express emotions, as well as what emotions they feel. In this section, we explore the role of context in shaping children’s knowledge about the appropriate display of emotions, as well as the degree to which children experience a fear common in infancy: stranger wariness.

Emotional Display Rules

Every society has a set of emotional display rules that specify the circumstances under which various
emotions should or should not be expressed (Safdar et al., 2009). We learn these rules very early in life through interactions with others. Every interaction between parent and infant is shaped by the culture in which they live, which influences their emotional expressions (Bornstein et al., 2013). When North American mothers play with their 7-month-old babies, for instance, they tend to model positive emotions, restricting their own emotional displays to show joy, interest, and surprise (Malatesta & Haviland, 1982). They also are more attentive to infants’ expression of positive emotions, such as interest or surprise, and respond less to negative emotions (Broesch, Rochat, Olah, Broesch, & Henrich, 2016). Thus, babies are socialized to respond and display their emotions in socially acceptable ways.

Which emotions are considered acceptable, as well as how they should be expressed, differ by culture and context. North American parents tickle and stimulate their babies, encouraging squeals of pleasure. The Gusii and Aka people of Central Africa prefer to keep babies calm and quiet; they engage in little face-to-face play (Hewlett et al., 1998; LeVine et al., 1994). These differences communicate cultural expectations about emotions (Halberstadt & Lozada, 2011). North American infants learn to express positive emotions, and Central African babies learn to restrain strong emotions.

Similarly, cultures often have particular beliefs about how much responsiveness is appropriate when babies cry and fuss, as well as expectations about infants’ abilities to regulate their own emotions (Halberstadt & Lozada, 2011). The !Kung hunter-gatherers of Botswana, Africa, respond to babies’ cries nearly immediately (within 10 seconds), whereas Western mothers tend to wait a considerably longer period of time before responding to infants’ cries (e.g., 10 minutes) (Barr, Konner, Bakeman, & Adamson, 1991). Fijian mothers tend to be more responsive than U.S. mothers to negative facial expressions in their infants (Broesch et al., 2016). Gusii mothers believe that constant holding, feeding, and physical care are essential for keeping an infant calm, which in turn protects the infant from harm and disease; therefore, like !Kung mothers, Gusii mothers respond immediately to their babies’ cries (LeVine et al., 1994). Non-Western infants are thought to cry very little because they are carried often (Bleah & Ellett, 2010). In one study, infants born to parents who were recent immigrants from Africa cried less than U.S. infants, illustrating the role of culture in influencing infant cries (Bleah & Ellett, 2010). Caregivers’ responses to infant cries influence infants’ capacity for self-regulation and responses to stress. Babies who receive more responsive and immediate caregiving when distressed show lower rates of persistent crying, spend more time in happy and calm states, and cry less overall as they approach their first birthday (Axia & Weisner, 2002; Papoušek & Papoušek, 1990).

Stranger Wariness

Many infants around the world display stranger wariness (also known as stranger anxiety), a fear of unfamiliar people. Whether infants show stranger wariness depends on the infants’ overall temperament, their past experience, and the situation in which they meet a stranger (Thompson & Limber, 1991). In many, but not all, cultures, stranger wariness emerges at about 6 months and increases throughout the first year of life, beginning to decrease after about 15 months of age (Bornstein et al., 2013; Sroufe, 1977).

Recent research has suggested that the pattern of stranger wariness varies among infants. Some show rapid increases and others show slow increases in stranger wariness; once wariness has been established, some infants show a steady
Among North American infants, stranger wariness is so common that parents and caregivers generally expect it. However, infants of the Efe people of Zaire, Africa, show little stranger wariness. This is likely related to the Efe collective caregiving system, in which Efe babies are passed from one adult to another, relatives and nonrelatives alike (Tronick, Morelli, & Ivey, 1992), and the infants form relationships with the many people who care for them (Meehan & Hawks, 2013). In contrast, babies reared in Israeli kibbutzim (cooperative agricultural settlements that tend to be isolated and subjected to terrorist attacks) tend to demonstrate widespread wariness of strangers. By the end of the first year, when infants look to others for cues about how to respond emotionally, kibbutz babies display far greater anxiety than babies reared in Israeli cities (Saarni, Mumme, & Campos, 1998). In this way, stranger wariness may be adaptive, modifying infants’ drive to explore in light of contextual circumstances (Easterbrooks, Bartlett, Beeghly, & Thompson, 2012).

Stranger wariness illustrates the dynamic interactions among the individual and context. The infant’s tendencies toward social interaction and past experience with strangers are important, of course, but so is the mother’s anxiety. Infants whose mothers report greater stress reactivity, who experience more anxiety and negative affect in response to stress, show higher rates of stranger wariness (Brooker et al., 2013; Waters, West, & Mendes, 2014). Characteristics of the stranger (e.g., his or her height), the familiarity of the setting, and how quickly the stranger approaches influence how the infant appraises the situation. Infants are more open when the stranger is sensitive to the infant’s signals and approaches at the infant’s pace (Mangelsdorf, 1992).

In sum, over the first few months of life, infants display the full range of basic emotions. More complex self-conscious emotions emerge with cognitive development and social interaction. Adults interact with infants, provide opportunities to observe and practice emotional expressions, and assist in regulating emotions. Much of emotional development is the result of the interplay of infants’ emerging capacities and the contexts in which they are raised, especially the emotional contexts within the home. The accompanying Applying Developmental Science feature discusses the challenges maternal depression poses for emotional development.

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**Maternal Depression and Emotional Development in Infancy**

We have seen that parent–infant interactions are critical to infants’ emotional development. Maternal depression poses significant risks to infants’ well-being. Depression is not simply sadness; rather, it is characterized by a lack of emotion and a preoccupation with the self that makes it difficult for depressed mothers to recognize their infants’ needs and provide care. Both mothers and fathers can become depressed, but most of the research examines mothers. The hormonal and social changes that accompany pregnancy and new motherhood place women at risk for postpartum depression, depression that occurs in the months after childbirth. However, depression can occur at any time in life.

Depression poses risks to parenting. Mothers who are depressed tend to view their infants differently than nondepressed mothers and independent observers (Newland, Parade, Dickstein, & Seifer, 2016). They are more likely to identify negative emotions (i.e., sadness) than positive emotions (i.e., happiness) in infant faces (Webb & Ayers, 2015). Challenging behaviors, such as fussiness and crying, and difficult temperaments tend to elicit more negative responses from depressed mothers (Newland et al., 2016). When depressed and nondepressed mothers were shown images of their own and unfamiliar infants’ joy and distress faces, mothers with depression showed blunted brain activity in response to their own infants’ joy and distress faces, suggesting muted responses to infants’ emotional cues (Laurent & Ablow, 2013). Depressed women tend to disengage faster from positive and negative infant emotional expressions (Webb & Ayers, 2015).

In practice, mothers who are depressed tend to be less responsive to their babies, show less affection, and other variants.
TEMPERAMENT IN INFANCY AND TODDLERHOOD

“Jayla is such an easygoing baby!” gushed her babysitter. “She eats everything, barely cries, and falls asleep without a fuss. I wish all my babies were like her.” The babysitter is referring to Jayla's temperament. Temperament, the characteristic way in which an individual approaches and reacts to people and situations, is thought to be one of the basic building blocks of emotion and personality. Temperament has strong biological determinants; behavior genetics research has shown genetic bases for temperament (Saudino & Micalizzi, 2015). Yet the expression of temperament reflects reciprocal interactions among genetic predispositions, maturation, and experience (Goodwin et al., 2015; Rothbart, 2011). Every infant behaves in a characteristic, predictable style that is influenced by his or her inborn tendencies toward arousal and stimulation as well as by experiences with adults and contexts. In other words, every infant displays a particular temperament style.

Styles of Temperament

The New York Longitudinal Study (NYLS), begun in 1956, is a pioneering study of temperament that uses more negative forms of touch, and show more negative emotions and behaviors such as withdrawal, intrusiveness, hostility, coerciveness, and insensitivity (Jennings et al., 2008). Given the poor parent–child interaction styles that accompany maternal depression, it may not be surprising that infants of depressed mothers show a variety of negative outcomes, including overall distress, withdrawn behavior, poor social engagement, and difficulty regulating emotions (Granat, Gadassi, Gilboa-Schechtman, & Feldman, 2017; Leventon & Bauer, 2013). They tend to show greater physiological arousal in response to stressors, have difficulty reading and understanding others' emotions, and are at risk for later problems in emotional development but also cognitive and language development (Liu et al., 2017; Prenoveau et al., 2017; Suurland et al., 2017).

The ongoing reciprocal interactions between mothers and infants account for the long-term negative effects of maternal depression (Granat et al., 2017). In one study, maternal depressive symptoms 9 months after giving birth predicted infants' negative reactions to maternal behavior at 18 months of age and, in turn, higher levels of depressive symptoms on the part of mothers when the children reached 27 months of age (Roben et al., 2015). Similarly, in a sample of infants studied from 4 to 18 months of age, family factors such as maternal depression and the mother's experience of relationship stress were associated with the infants' developing strong negative emotions early in infancy, which compromised their emotion regulation capacities (Bridgett et al., 2009). Declines in infants' regulatory control were in turn associated with negative parenting in toddlerhood, because parents and children interact with and influence each other reciprocally.

Depression can be treated with therapy with or without the accompaniment of antidepressant medication (Hollon et al., 2016; Swartz et al., 2016). Experts argue that in addition to treating maternal depression, parenting interventions are particularly important in helping children of depressed mothers (Goodman & Garber, 2017). Interventions that teach parents how to interact with their children will foster the parent–child relationships that promote healthy development (Dempsey et al., 2016; Messer et al., 2018).

What Do You Think?

In your view, how can we best support mothers? If you were to create a program to help prevent depression or to help depressed mothers, what might you include?

1. Identify examples of how infants' experience and expression of basic and self-conscious emotions are influenced by their interactions with others and their physical and cultural context. How might these interactions and contexts influence the development of emotion regulation?

2. How might social referencing and stranger wariness reflect adaptative responses to a context? Why does stranger wariness vary among children and cultures?
has followed 133 infants into adulthood. Early in life, the infants in the study demonstrated differences in nine characteristics that are thought to capture the essence of temperament (Buss & Plomin, 1984; Chess & Thomas, 1991; Goldsmith et al., 1987):

- **Activity level.** Some babies wriggle, kick their legs, wave their arms, and move around a great deal, whereas other babies tend to be more still and stay in one place.
- **Rhythmicity.** Some infants are predictable in their patterns of eating, sleeping, and defecating; other babies are not predictable.
- **Approach-withdrawal.** Some babies tend to approach new situations, people, and objects, whereas others withdraw from novelty.
- **Adaptability.** Some babies get used to new experiences and situations quickly; others do not.
- **Intensity of reaction.** Some babies have very extreme reactions, giggling exuberantly and crying with piercing wails. Other babies show more subdued reactions, such as simple smiles and soft, whimpering cries.
- **Threshold of responsiveness.** Some babies notice many types of stimuli—sights, sounds, and touch sensations—and react to them. Other infants notice few types of stimuli and seem oblivious to changes.
- **Quality of mood.** Some babies tend toward near-constant happiness, while others tend toward irritability.
- **Distractibility.** Some babies can be easily distracted from objects or situations, while others cannot.
- **Attention span.** Some babies play with one toy for a long time without becoming bored, whereas others get bored easily and change toys often.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Examples</th>
</tr>
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<tbody>
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</tr>
</tbody>
</table>

Some aspects of infant temperament, particularly activity level, irritability, attention, and sociability or approach-withdrawal, show stability for months and years at a time and in some cases even into adulthood (Lemery-Chalfant, Kao, Swann, & Goldsmith, 2013; Papageorgiou et al., 2014). Infants’ growing ability to regulate their attention and emotions holds implications for some components of temperament, such as rhythmicity, distractibility, and intensity of reaction. The components of infant temperament cluster into three profiles (Thomas & Chess, 1977; Thomas, Chess, & Birch, 1970):

- **Easy temperament:** Easy babies are often in a positive mood, even-tempered, open, adaptable, regular, and predictable in biological functioning. They establish regular feeding and sleeping schedules easily.
- **Difficult temperament:** Difficult babies are active, irritable, and irregular in biological rhythms. They are slow to adapt to changes in routine or new situations, show intense and frequent unpleasant moods, react vigorously to change, and have trouble adjusting to new routines.
- **Slow-to-warm-up temperament:** Just as it sounds, slow-to-warm-up babies tend to be inactive, moody, and slow to adapt to new situations and people. They react to new situations with mild irritability but adjust more quickly than do infants with difficult temperaments.

Although it may seem as if all babies could be easily classified, about one-third of the infants in the New York Longitudinal Study did not fit squarely into any of the three categories but displayed a mix of characteristics, such as eating and sleeping regularly but being slow to warm up to new situations (Thomas & Chess, 1977; Thomas et al., 1970). Another influential model of temperament, by Mary Rothbart, includes three dimensions (Rothbart, 2011; Rothbart & Bates, 2007):

- **Extraversion/surgency**—the tendency toward positive emotions. Infants who are high in extraversion/surgency approach experiences with confidence, energy, and positivity, as indicated by smiles, laughter, and approach-oriented behaviors.
- **Negative affectivity**—the tendency toward negative emotions, such as sadness, fear, distress, and irritability.
- **Effortful control**—the degree to which one can focus attention, shift attention, and inhibit responses in order to manage arousal. Infants who are high in effortful control are able to regulate their arousal and soothe themselves.

From this perspective, temperament reflects how easily we become emotionally aroused or our reactivity to stimuli, as well as how well we are able to control our emotional arousal (Rothbart, 2011). Some infants and children are better able to distract themselves, focus their attention, and inhibit impulses than others. The ability to self-regulate and

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manage emotions and impulses is associated with positive long-term adjustment, including academic achievement, social competence, and resistance to stress, in both Chinese and North American samples (Chen & Schmidt, 2015).

Infant temperament tends to be stable over the first year of life but less so than childhood temperament, which can show stability over years, even into adulthood (Bornstein et al., 2015). In infancy, temperament is especially open to environmental influences, such as interactions with others (Gartstein, Putnam, Aron, & Rothbart, 2016). Young infants’ temperament can change with experience, neural development, and sensitive caregiving (e.g., helping babies regulate their negative emotions) (Jonas et al., 2015; Thompson et al., 2013). As infants gain experience and learn how to regulate their states and emotions, those who are cranky and difficult may become less so. By the second year of life, styles of responding to situations and people are better established, and temperament becomes more stable. Temperament at age 3 remains stable, predicting temperament at age 6 and personality traits at age 26 (Dyson et al., 2015).

Context and Goodness of Fit
Like all aspects of development, temperament is influenced by reciprocal reactions among individuals and their contexts. An important influence on socioemotional development is the **goodness of fit** between the child’s temperament and the environment around him or her, especially the parents’ temperaments and childrearing methods (Chess & Thomas, 1991). Infants are at particular risk for poor outcomes when their temperaments show poor goodness of fit to the settings in which they live (Rothbart & Bates, 1998). For example, if an infant who is fussy, difficult, and slow to adapt to new situations is raised by a patient and sensitive caregiver who provides time for him or her to adapt to new routines, the infant may become less cranky and more flexible over time. The infant may adapt her temperament style to match her context so that later in childhood, she may no longer be classified as difficult and no longer display behavioral problems (Bates, Pettit, Dodge, & Ridge, 1998). If, on the other hand, a child with a difficult temperament is reared by a parent who is insensitive, coercive, and difficult in temperament, the child may not learn how to regulate her emotions and may have behavioral problems and adjustment difficulties that worsen with age, even into early adolescence and beyond (Pluess, Birkbeck, & Belsky, 2010). Accordingly, when children are placed in low-quality caregiving environments, those with difficult temperaments respond more negatively and show more behavioral problems than do those with easy temperaments (Poehlmann et al., 2011). The Lives in Context feature examines the impact of extremely negative experiences, trauma, on development.

**Trauma and Emotional Development**

Can infants remember early life experiences? Does exposure to adversity, such as maltreatment, poverty, and violence, influence infants’ development? Very young infants likely do not recall specific experiences and events, but early exposure to trauma may affect infants’ development in ways that can last a lifetime. For example, maladaptive contexts may pose risks of physical harm to children, directly influencing neurological development. However, trauma also poses invisible long-term risks to children’s emotional development and mental health (Blair, 2010).

How does early trauma affect emotional development? The experience of early social adversity may have epigenetic effects on the genes that regulate the endocrine system, which controls hormone production and release at all ages in life (Conradt, 2017). Infancy may be a particularly plastic time in development, with heightened potential for lifelong epigenetic changes that may sensitize responses to stress throughout the lifespan (Laurent, Harold, Leve, Shelton, & Van Goozen, 2016). For example, research with adults reveals that childhood maltreatment is associated with increased stress reactivity in adulthood (Turecki & Meaney, 2016).

However, not all infants respond to early life stress with heightened reactivity. Some infants exposed to trauma show lower levels of stress hormones and reduced reactivity to stress (Turecki & Meaney, 2016). The timing and intensity of adversity influences developmental outcomes. Exposure to particularly intense chronic stress early in development can lead to hyperactive stress responses that may be followed by blunted responses (Laurent et al., 2016). Blunted responses may reflect adaptations to chronically stressful situations. Unpredictable stressors, on the other hand, may lead to heightened stress reactivity as the individual adapts to volatile and unexpected situations (Blair, 2010). Both
heightened and blunted stress responses may be adaptive attempts to optimize survival in nonoptimal caregiving environments, yet these adaptations may carry behavioral costs, such as heightened distress when confronted with stress and longer-term anxiety and depressive symptoms, which negatively affect developmental trajectories (Laurent et al., 2016).

Early life stress poses risks to emotional development, but the caregiving environment also influences the developing stress response system. For example, maternal presence buffers and regulates infants’ hormonal and behavioral responses to threats (Howell et al., 2017). Sensitive mothers tend to have infants who display better self-regulation during stressful events; intrusive mothers tend to have the opposite effect (Enlow et al., 2014). Warm parenting within a predictable stimulating environment with supportive adults and family can help infants develop the self-regulation skills to adapt to adverse contexts (Blair, 2010). Unfortunately, trauma often disrupts the caregiving system, making adaptation quite difficult.

What Do You Think?
Consider protective factors for infants’ adjustment to experiencing trauma. What individual characteristics and developmental competencies can help infants adapt? How might the home and caregiving context influence infants’ adjustment? How might neighborhood and community factors influence infants’ adaptation?

An infant’s temperament may be stable over time because certain temperamental qualities evoke certain reactions from others, promoting goodness of fit. Easy babies usually get the most positive reactions from others, whereas babies with a difficult temperament receive mixed reactions (Chess & Thomas, 1991). For example, an “easy” baby tends to smile often, eliciting smiles and positive interactions from others, which in turn reinforce the baby’s “easy” temperamental qualities (Planalp, Van Hulle, Lemery-Chalfant, & Goldsmith, 2017). Conversely, a “difficult” baby may evoke more frustration and negativity from caregivers as they try unsuccessfully to soothe the baby’s fussing. Researchers found that mothers who view their 6-month-old infants as difficult may be less emotionally available to them (Kim & Teti, 2014). Babies’ emotionality and negative emotions predict maternal perceptions of parenting stress and poor parenting (Odeh, Murdock, Vadnais, Bridgett, & Gartstein, 2013; Paulussen-Hoogeboom, Stams, Hermans, & Peetsma, 2007). Goodness of fit at 4 and 8 months of age predicts a close bond with caregivers at 15 months (Seifer et al., 2014).

Temperament can also be related to mothers’ own temperament, as well as their expectations about their infants and their ability to parent (Grady & Karakak, 2017). In one study, mothers who, prior to giving birth, considered themselves less well equipped to care for their infants were found to be more likely to have infants who showed negative aspects of temperament, such as fussiness, irritability, and difficulty being soothed (Verhage, Oosterman, & Schuengel, 2013). This suggests that perceptions of parenting may shape views of infant temperament—and thereby shape temperament itself. In other research, new mothers’ feelings of competence 3 months after giving birth were positively associated with infant temperament. Mothers’ beliefs about their ability to nurture are shaped by the interaction between their infants’ traits and their own parenting self-efficacy, as well as their opportunities for developing successful caregiving routines (Verhage et al., 2013). This contextual dynamic has been found to hold true across cultures. Both British and Pakistani mothers in the United Kingdom reported fewer problems with their infants’ temperaments at 6 months of age when the mothers had a greater sense of parenting efficacy and displayed more warm and less hostile parenting styles (Prady, Kiernan, Fairley, Wilson, & Wright, 2014).

As mentioned earlier, socioemotional development is a dynamic process in which infants’ behavior and temperament styles influence the family processes that shape their development. Sensitive and patient caregiving is not always easy with a challenging child, and adults’ own temperamental styles influence their caregiving. A poor fit between the caregiver’s and infant’s temperament can make an infant more fussy and cranky. When a difficult infant is paired with a parent with a similar temperament—one who is impatient, irritable, and forceful—behavioral problems in childhood and adolescence are likely (Chess & Thomas, 1984; Rubin, Hastings, Chen, Stewart, & McNichol, 1998).

The most adaptive matches between infant temperament and context can sometimes be surprising. Consider the Maasai, an African semi-nomadic ethnic group. In times of drought, when the environment becomes extremely hostile, herds of cattle and goats die, and infant mortality rises substantially. Under these challenging conditions, infants with difficult temperaments tend to survive at higher rates than do those with easy temperaments. Infants who cry and are demanding are attended to, are fed more, and are in better physical condition than easy babies, who tend to cry less and therefore are assumed to be content (Gardiner & Kosmitzki, 2018).
Thus, the Maasai infants with difficult temperaments demonstrate higher rates of survival because their temperaments better fit the demands of the hostile context in which they are raised. Our temperament interacts with our family and community context to influence our development.

**Cultural Differences in Temperament**

Researchers have observed consistent cultural differences in temperament that are rooted in cultural norms for how individuals are perceived. Japanese mothers, for example, view their infants as interdependent beings who must learn the importance of relationships and connections with others (Rothbaum, Weisz, Pott, Miyake, & Morelli, 2000b). North American mothers, on the other hand, view their task as shaping babies into autonomous beings (Kojima, 1986). Whereas Japanese mothers tend to interact with their babies in soothing ways, discouraging strong emotions, North American mothers are active and stimulating (Rothbaum et al., 2000a). Differences in temperament result, such that Japanese infants tend to be more passive, less irritable and vocal, and more easily soothed when upset than North American infants (Kojima, 1986; Lewis, Ramsay, & Kawakami, 1993; Rothbaum et al., 2000b). Culture influences the behaviors that parents view as desirable and the means that parents use to socialize their infants (Chen & Schmidt, 2015; Kagan, 2013). Culture, therefore, plays a role in how emotional development—in this case, temperament—unfolds.

Asian cultures often prioritize low arousal and emotionality and socialize infants in line with these values. Chinese American, Japanese American, and Hmong children tend to display lower levels of irritability, exhibit less physical activity, and engage in more self-soothing and self-control than do European American children (Friedlmeier, Çorapçi, & Benga, 2015; Super & Harkness, 2010). Similarly, a recent comparison of toddlers from Chile, South Korea, Poland, and the United States showed that the South Korean toddlers scored highest on measures of control (Krasnaier et al., 2016).

If infants from Asian cultures engage in more self-soothing, are they more temperamentally resistant to stress? One study examined levels of the hormone cortisol in infants receiving an inoculation (Lewis et al., 1993). Cortisol, which is released as part of the fight-or-flight response, is often used as a marker of stress. Four-month-old Japanese infants showed a pronounced cortisol response, suggesting that they were experiencing great stress, coupled with little crying. The U.S. infants, on the other hand, displayed intense behavioral reactions to the pain and took longer to calm down, yet they displayed a lower cortisol response. In other words, although the Japanese babies appeared quiet and calm, they were more physiologically stressed than the U.S. infants. It seems that cultural views of the nature of arousal and emotional regulation influence parenting behaviors and ultimately infants’ responses to stressors (Friedlmeier et al., 2015).

In summary, we have seen that the cultures in which we are immersed influence how we interpret stimuli and respond to the world, including how we manifest stress. Culture also influences attachment.

**ATTACHMENT IN INFANCY AND TODDLERHOOD**

Raj gurgles and cries out while lying in his crib. As his mother enters the room, he squeals excitedly. Raj’s mother smiles as she reaches into the crib, and Raj giggles with delight as she picks him up. Raj and his mother have formed an important emotional bond, called attachment. Attachment refers to a lasting emotional tie between two people who each strive to maintain closeness to the other and act to ensure that the relationship continues.

Attachment relationships serve as an important backdrop for emotional and social development. Our earliest attachments are with our primary caregivers, most often our mothers. It was once thought that feeding determined patterns of attachment. Freud, for example, emphasized the role of feeding and successful weaning on infants’ personality and well-being. Behaviorist theorists explain attachment as the result of the infants associating their mothers with food, a powerful reinforcer that satisfies a biological need. Certainly, feeding is important for infants’ health and well-being and offers opportunities for the close contact needed to develop attachment bonds, but feeding itself does not determine attachment. In one famous study, baby rhesus monkeys were reared with two inanimate surrogate “mothers”: one made of wire mesh and a second covered with terrycloth (see
Figure 6.1. The baby monkeys clung to the terrycloth mother despite being fed only by the wire mother, suggesting that attachment bonds are not based on feeding but rather on contact comfort (Harlow & Zimmerman, 1959). So how does an attachment form, and what is its purpose?

**Bowlby’s Ethological Perspective on Attachment**

John Bowlby, a British psychiatrist, posed that early family experiences influence emotional disturbances not through feeding practices, conditioning, or psychoanalytic drives but via inborn tendencies to form close relationships. Specifically, Bowlby (1969, 1988) developed an ethological theory of attachment that characterizes it as an adaptive behavior that evolved because it contributed to the survival of the human species. Inspired by ethology, particularly by Lorenz’s work on the imprinting of geese (see Chapter 1) and by observations of interactions of monkeys, Bowlby posited that humans are biologically driven to form attachment bonds with other humans. An attachment bond between caregivers and infants ensures that the two will remain in close proximity, thereby aiding the survival of the infant and, ultimately, the species. From this perspective, caregiving responses are inherited and are triggered by the presence of infants and young children.
Infants’ Signals and Adults’ Responses

From birth, babies develop a repertoire of behavior signals to which adults naturally attend and respond, such as smiling, cooing, and clinging. Crying is a particularly effective signal because it conveys negative emotion that adults can judge reliably, and it motivates adults to relieve the infants’ distress. Adults are innately drawn to infants, find infants’ signals irresistible, and respond in kind. For example, one recent study found that nearly 700 mothers in 11 countries (Argentina, Belgium, Brazil, Cameroon, France, Kenya, Israel, Italy, Japan, South Korea, and the United States) tended to respond to their infants’ cries and distress by picking up, holding, and talking to their infants (Bornstein et al., 2017). Infants’ behaviors, immature appearance, and even smell draw adults’ responses (Kringelbach, Stark, Alexander, Bornstein, & Stein, 2016). Infants, in turn, are attracted to caregivers who respond consistently and appropriately to their signals. During the first months of life, infants rely on caregivers to regulate their states and emotions—to soothe them when they are distressed and help them establish and maintain an alert state (Thompson, 2013). Attachment behaviors provide comfort and security to infants because they bring babies close to adults who can protect them.

Magnetic resonance imaging (MRI) scans support a biological component to attachment, as first-time mothers show specific patterns of brain activity in response to infants. Mothers’ brains light up with activity when they see their own infants’ faces, and areas of the brain that are associated with rewards are activated specifically in response to happy, but not sad, infant faces (Strathearn, Jian, Fonagy, & Montague, 2008). In response to their infants’ cries, U.S., Chinese, and Italian mothers show brain activity in regions associated with auditory processing, emotion, and the intention to move and speak, suggesting automatic responses to infant expressions of distress (Bornstein et al., 2017).

Phases of Attachment

Bowlby proposed that attachment formation progresses through several developmental phases during infancy, from innate behaviors that bring the caregiver into contact to a mutual attachment relationship. With each phase, infants’ behavior becomes increasingly organized, adaptable, and intentional.

**Phase 1: Preadaptation—Indiscriminate Social Responsiveness (Birth to 2 Months):** Infants instinctively elicit responses from caregivers by crying, smiling, and making eye contact with adults. Infants respond to any caregiver who reacts to their signals, whether parent, grandparent, child care provider, or sibling.

**Phase 2: Early Attachments—Discriminating Sociability (2 Through 6–7 Months):** When caregivers are sensitive and consistent in responding to babies’ signals, babies learn to associate their caregivers with the relief of distress, forming the basis for an initial bond. Babies begin to discriminate among adults and prefer familiar people. They direct their responses toward a particular adult or adults who are best able to soothe them.

**Phase 3: Attachments (7–24 Months):** Infants develop attachments to specific caregivers who attend, accurately interpret, and consistently respond to their signals. Infants can gain proximity to caregivers through their own motor efforts, such as crawling.

**Phase 4: Reciprocal Relationships (24–30 Months and Onward):** With advances in cognitive and language development, children can engage in interactions with their primary caregiver as partners, taking turns and initiating interactions within the attachment relationship. They begin to understand others’ emotions and goals and apply this understanding through strategies such as social referencing.

Secure Base, Separation Anxiety, and Internal Working Models

The formation of an attachment bond is crucial for infants’ development because it enables infants to begin to explore the world, using their attachment figure as a secure base, or foundation, to return to when frightened. When infants are securely attached to their caregivers, they feel confident to explore the world and to learn by doing so. As clear attachments form, starting at about 7 months, infants are likely to experience separation anxiety (sometimes called separation protest), a reaction to separations from an attachment figure that is characterized by distress and crying (Lamb & Lewis, 2015). Infants may follow, cling to, and climb on their caregivers in an attempt to keep them near.

Separation anxiety tends to increase between 8 and 15 months of age, and then it declines. This pattern appears across many cultures and environments as varied as those of the United States, Israeli kibbutzim, and !Kung hunter-gatherer groups in Africa (Kagan et al., 1994). It is the formation of the attachment bond that makes separation anxiety possible, because infants must feel connected to their caregivers in order to feel distress in the caregivers’ absence. Separation anxiety declines as infants develop reciprocal relationships with caregivers, increasingly use them as secure bases, and can understand and predict parents’ patterns of...
separation and return, reducing their confusion and distress.

The attachment bond developed during infancy and toddlerhood influences personality development because it comes to be represented as an internal working model, which includes the children’s expectations about whether they are worthy of love, whether their attachment figures will be available during times of distress, and how they will be treated. The internal working model influences the development of self-concept, or sense of self, in infancy and becomes a guide to later relationships throughout life (Bretherton & Munholland, 2016).

**Ainsworth’s Strange Situation and Attachment Classifications**

Virtually all infants form an attachment to their parents, but Canadian psychologist Mary Salter Ainsworth proposed that infants differ in security of attachment—the extent to which they feel that parents can reliably meet their needs. Like Bowlby, Ainsworth believed that infants must develop a dependence on parents, viewing them as a metaphorical secure base, in order to feel comfortable exploring the world (Salter, 1940). To examine attachment, Mary Ainsworth developed the Strange Situation, a structured observational procedure that reveals the security of attachment when the infant is placed under stress. As shown in Table 6.2, the Strange Situation is a heavily structured observation task consisting of eight 3-minute-long episodes. In each segment, the infant is with the parent (typically the mother), with a stranger, with both, or alone. Observations center on the infant’s exploration of the room, his or her reaction when the mother leaves the room, and, especially, his or her responses during reunions, when the mother returns.

<table>
<thead>
<tr>
<th>EVENT</th>
<th>ATTACHMENT BEHAVIOR OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimenter introduces mother and infant to playroom and leaves</td>
<td>Mother as secure base</td>
</tr>
<tr>
<td>Infant plays with toys and parent is seated</td>
<td>Reaction to separation from mother</td>
</tr>
<tr>
<td>Stranger enters, talks with caregiver, and approaches infant</td>
<td>Reaction to unfamiliar adult</td>
</tr>
<tr>
<td>Mother leaves room; stranger responds to baby if upset</td>
<td>Reaction to reunion</td>
</tr>
<tr>
<td>Mother returns and greets infant</td>
<td>Reaction to reunion</td>
</tr>
<tr>
<td>Mother leaves room</td>
<td>Reaction to separation from mother</td>
</tr>
<tr>
<td>Stranger enters room and offers comfort to infant</td>
<td>Reaction to stranger and ability to be soothed by stranger</td>
</tr>
<tr>
<td>Mother returns and greets infant; tries to interest the infant in toys</td>
<td>Reaction to reunion</td>
</tr>
</tbody>
</table>

On the basis of responses to the Strange Situation, infants are classified into one of several attachment types (Ainsworth, Blehar, Waters, & Wall, 1978).

**Secure Attachment:** The securely attached infant uses the parent as a secure base, exploring the environment and playing with toys in the presence of the parent, but regularly checking in (e.g., by looking at the parent or bringing toys). The infant shows mild distress when the parent leaves. On the parent’s return, the infant greets the parent enthusiastically, seeks comfort, and then returns to individual play. About two-thirds of North American infants who complete the Strange Situation are classified as securely attached (Lamb & Lewis, 2015).

**Insecure-Avoidant Attachment:** Infants who display an insecure-avoidant attachment show little interest in the mother and busily explore the room during the Strange Situation. The infant is not distressed when the mother leaves and may react to the stranger in similar ways as to the mother. The infant ignores or avoids the mother on return or shows subtle signs of avoidance, such as failing to greet her or turning away from her. About 15% of samples of North American infants’ responses to the Strange Situation reflect this style of attachment (Lamb & Lewis, 2015).
Insecure-Resistant Attachment: Infants with an insecure-resistant attachment show a mixed pattern of responses to the mother. The infant remains preoccupied with the mother throughout the procedure, seeking proximity and contact, clinging even before the separation. When the mother leaves, the infant is distressed and cannot be comforted. During reunions, the infant's behavior suggests resistance, anger, and distress. The infant might seek proximity to the mother and cling to her while simultaneously pushing her away, hitting, or kicking. About 10% of North American infants tested in the Strange Situation fall into this category (Lamb & Lewis, 2015).

Insecure-Disorganized Attachment: A fourth category was added later to account for the small set of infants (10% or below) who show inconsistent, contradictory behavior in the Strange Situation. The infant with insecure-disorganized attachment shows a conflict between approaching and fleeing the caregiver, suggesting fear (Main & Solomon, 1986). Infants showing insecure-disorganized attachment experience the greatest insecurity, appearing disoriented and confused. They may cry unexpectedly and may show a flat, depressed emotion and extreme avoidance or fearfulness of the caregiver.

Attachment-Related Outcomes

Secure parent–child attachments are associated with positive socioemotional development in infancy, childhood, and adolescence. Preschool and school-age children who were securely attached as infants tend to be more curious, empathetic, self-confident, and socially competent, and they will have more positive interactions and close friendships with peers (Groh, Fearon, van IJzendoom, Bakermans-Kranenburg, & Roisman, 2017; Veríssimo, Santos, Fernandes, Shin, & Vaughn, 2014). The advantages of secure attachment continue into adolescence. Adolescents who were securely attached in infancy and early childhood are more socially competent, tend to be better at making and keeping friends and functioning in a social group, and demonstrate greater emotional health, self-esteem, ego resiliency, and peer competence (Boldt, Kochanska, Yoon, & Koenig Nordling, 2014; Sroufe, 2016; Stern & Cassidy, 2018).

In contrast, insecure attachment in infancy, particularly disorganized attachment, is associated with long-term negative outcomes, including poor peer relationships, poor social competence, and higher rates of antisocial behavior, depression, and anxiety from childhood into adulthood (Groh et al., 2017; Kochanska & Kim, 2013; Wolke et al., 2014). Insecure attachments tend to correlate with difficult life circumstances and contexts, such as parental problems, low socioeconomic status (SES), and environmental stress, that persist throughout childhood and beyond, influencing the continuity of poor outcomes (Granqvist et al., 2017). One longitudinal study suggested that infants with an insecure-disorganized attachment at 12 and 18 months of age were, as adults, more likely to have children with insecure-disorganized attachment, suggesting the possibility of intergenerational transmission of insecure attachment (and associated negative outcomes) (Raby, Steele, Carlson, & Sroufe, 2015). Conversely, attachment is not set in stone. Quality parent–child interactions can at least partially make up for poor interactions early in life. Children with insecure attachments in infancy who experience subsequent sensitive parenting show more positive social and behavioral outcomes in childhood and adolescence than do those who receive continuous care of poor quality (Sroufe, 2016). In addition, infants can form attachments to multiple caregivers with secure attachments, perhaps buffering the negative effects of insecure attachments (Boldt et al., 2014).

Influences on Attachment

The most important determinant of infant attachment is the caregiver’s ability to consistently and sensitively respond to the child’s signal. Copyright ©2021 by SAGE Publications, Inc. This work may not be reproduced or distributed in any form or by any means without express written permission of the publisher.
securely attached infants provide stimulation and warmth and consistently synchronize or match their interactions with their infants’ needs (Beebe et al., 2010). Secure mother–infant dyads show more positive interactions and fewer negative interactions compared with insecure dyads (Guo et al., 2015). The goodness of fit between the infant and parent’s temperament influences attachment, supporting the role of reciprocal interactions in attachment (Seifer et al., 2014).

Infants who are insecurely attached have mothers who tend to be more rigid, unresponsive, inconsistent, and demanding (Gartstein & Iverson, 2014). The insecure-avoidant attachment pattern is associated with parental unavailability or rejection. Insecure-resistant attachment is associated with inconsistent and unresponsive parenting. Parents may respond inconsistently, offering overstimulating and intrusive caregiving at times and unresponsive care that is not attentive to the infant’s signals at other times. Frightening parental behavior (at the extreme, child abuse) is thought to play a role in insecure-disorganized attachment (Duschinsky, 2015). Disorganized attachment is more common among infants who have been abused or raised in particularly poor caregiving environments; however, disorganized attachment itself is not an indicator of abuse (Granqvist et al., 2017; Lamb & Lewis, 2015).

Parent–infant interactions and relationships are influenced by many contextual factors. For example, conflict among parents is associated with lower levels of attachment security (Tan, McIntosh, Kothe, Opie, & Olsson, 2018). Insecure attachment responses may therefore represent adaptive responses to poor caregiving environments; however, disorganized attachment itself is not an indicator of abuse (Granqvist et al., 2017; Lamb & Lewis, 2015).

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Stability of Attachment

Attachment patterns tend to be stable over infancy and early childhood, especially when securely attached infants receive continuous responsive care (Ding, Xu, Wang, Li, & Wang, 2014; Marvin, Britner, & Russell, 2016). The continuity of care influences the stability of attachment. For example, negative experiences can disrupt secure attachment. The loss of a parent, parental divorce, a parent’s psychiatric disorder, and physical abuse, as well as changes in family stressors, adaptive processes, and living conditions, can transform a secure attachment into an insecure attachment pattern later in childhood or adolescence (Feeney & Monin, 2016; Lyons-Ruth & Jacobvitz, 2016). Contextual factors such as low SES, family and community stressors, and the availability of supports influence the stability of attachment through their effect on parents’ emotional and physical resources and the quality of parent–infant interactions (Booth-LaForce et al., 2014; Thompson, 2016; Van Ryzin, Carlson, & Sroufe, 2011). Securely attached infants reared in contexts that pose risks to development are at risk to develop insecure attachments, whereas risky contexts tend to stabilize insecure attachment over time (Pinquart, Feußner, & Ahnert, 2013). An insecure attachment between child and parent can be overcome by changing maladaptive interaction patterns, increasing sensitivity on the part of the parent, and fostering consistent and developmentally appropriate responses to children’s behaviors. Pediatricians, counselors, and social workers can help parents identify and change ineffective parenting behaviors to improve parent–child interaction patterns.

Although most research on attachment has focused on the mother–infant bond, we know that infants form multiple attachments (Dagan & Sagi-Schwartz, 2018). Consider the Efe foragers of the Democratic Republic of Congo, among whom infants are cared for by many people, as adults’ availability varies with their hunting and gathering duties (Morelli, 2015). Efe infants experience frequent changes in residence and camp, exposure to many adults, and frequent interactions with multiple caregivers. It is estimated that the Efe infant will typically come into contact with 9 to 14 and as many as 20 people within a 2-hour period. Efe infants are reared in an intensely social community and develop many trusting relationships—many attachments to many people (Morelli, 2015). On a smaller scale, Western infants also develop multiple attachments to mothers, fathers, family members, and caregivers. Multiple attachment relationships offer important developmental opportunities. For example, an infant’s secure attachment relationship with a father can compensate for the negative effects of an insecure attachment to a mother (Dagan & Sagi-Schwartz, 2018; Kochanska & Kim, 2013). It is important that infants develop attachments with some caregivers—but which caregivers, whether mothers, fathers, or other responsive adults, matters less than the bond itself. The Lives in Context feature discusses a challenge to attachment that many military families face: parental absence due to military deployment.
Infant Adjustment to Parental Deployment

The parent–infant relationship is vital to cognitive and especially socioemotional development. How does parental absence influence children’s development? Infants who are raised in military families may experience the prolonged absence of a parent who is deployed abroad. Parental absence is a significant stressor for infants and young children.

Infants thrive on predictable routine environments and may experience more stress than older children when deployment and unexpected changes disrupt the family (Paris, DeVoe, Ross, & Acker, 2010). Wartime deployments increase stress for families. Rates of marital conflict and domestic violence rise along with increases in parental anxiety and depression, a sense of ambiguous loss, and perceived parenting stress (Trautmann, Alhusen, & Gross, 2015). These factors may limit a parent’s emotional availability and sensitivity, vital to supporting their children’s adjustment. Children’s stress, in turn, influences parents’ responses (Paley, Lester, & Mogil, 2013).

Sometimes adults dismiss infants’ awareness and grasp of deployment separations. While they likely do not understand deployment itself, infants and toddlers are aware of deployment separations and likely are able to mourn parental separations (Ososky & Chartrand, 2013). They can sense the varied emotions that caregivers and other nearby adults experience, such as sadness, anger, and anxiety. However, most infants and young children are resilient and, although they miss the absent parent, fare well.

The ability of infants and young children to manage a parent’s deployment successfully is influenced by the available parent’s ability to manage stress, cope with the changes in roles and responsibilities, and respond sensitively and consistently to the infant (Ososky & Chartrand, 2013; Paris et al., 2010). To help infants and toddlers, parents should maintain consistent and predictable routines. Stay connected to the deployed parent through online video communication and by creating videos prior to deployment to permit the child to regularly see and hear the parent. Help toddlers label their emotions and link them to specific behaviors or events. Warm sensitive parenting that fosters emotional connections and security can help infants weather parental separations. Interventions to help military families before, during, and after deployment tend to focus on helping parents be mindful and aware of their own and their child’s emotions and experiences, learn effective skills for interacting with children, and learn how to manage emotions and promote adjustment (Julian et al., 2018a, 2018b).

What Do You Think?

1. Consider the effects of parental deployment from a biocological perspective. Identify factors within the infant and parents that might influence successful adaptation. What are some microsystem and mesosystem factors that might contribute to infants’ adaptation?

2. Identify two exosystem factors that might influence infant’s experience of and adjustment to parental deployment.

3. Consider the macrosystem and identify two potential influences on adaptation to parental deployment.

Cultural Variations in Attachment Classifications

Attachment occurs in all cultures, but whether the Strange Situation is applicable across cultural contexts is a matter of debate. Research has shown that infants in many countries, including Germany, Holland, Japan, and the United States, approach the Strange Situation in similar ways (Sagi, Van IJzendoorn, & Koren-Karie, 1991). In addition, the patterns of attachment identified by Ainsworth occur in a wide variety of cultures in North America, Europe, Asia, Africa, and the Middle East (Bornstein et al., 2013; Cassibba, Sette, Bakermans-Kranenburg, & van IJzendoorn, 2013; Huang, Lewin, Mitchell, & Zhang, 2012; Jin, Jacobvitz, Hazen, & Jung, 2012; Thompson, 2013).

Nevertheless, there are differences. For example, insecure-avoidant attachments are more common in Western European countries, and insecure-resistant attachments are more prevalent in Japan and Israel (Van IJzendoorn & Kroonenberg, 1988). This pattern may result from the fact that Western cultures tend to emphasize individuality and independence, whereas Eastern cultures are more likely to emphasize the importance of relationships and connections with others, collectivism. Individualist and collectivist cultural perspectives interpret children’s development in different ways; Western parents might interpret insecure-resistant behavior as clingy, whereas Asian parents might interpret it as successful bonding (Gardiner & Kosmitzki, 2018).

Many Japanese and Israeli infants become highly distressed during the Strange Situation and
show high rates of insecure resistance. Resistance in Japanese samples of infants can be attributed to cultural childrearing practices that foster mother-infant closeness and physical intimacy that leave infants unprepared for the separation episodes; the Strange Situation may be so stressful for them that they resist comforting (Takahashi, 1990). In other words, the Strange Situation may not accurately measure the attachment of these infants. Similarly, infants who are raised in small, close-knit Israeli kibbutz communities do not encounter strangers in their day-to-day lives, so the introduction of a stranger in the Strange Situation procedure can be overly challenging for them. At the same time, kibbutz-reared infants spend much of their time with their peers and caregivers and see their parents infrequently and therefore may prefer to be comforted by people other than their parents (Sagi et al., 1985).

Dogon infants from Mali, West Africa, show rates of secure attachment that are similar to those of Western infants, but the avoidant attachment style is not observed in samples of Dogon infants because infants are in constant proximity to mothers who respond to infant distress and feed infants on demand.

As shown in Figure 6.2, although secure attachment is most common, the prevalence of other attachment styles varies internationally. The behaviors that characterize sensitive caregiving

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**FIGURE 6.2**

*Cross-Cultural Variations in Attachment*

<table>
<thead>
<tr>
<th>Country</th>
<th>Secure</th>
<th>Anxious/Resistant</th>
<th>Anxious/Avoidant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>67.7%</td>
<td>8.6%</td>
<td>27.1%</td>
</tr>
<tr>
<td>Israel</td>
<td>64.4%</td>
<td>6.8%</td>
<td>28.8%</td>
</tr>
<tr>
<td>United States</td>
<td>64.8%</td>
<td>14.1%</td>
<td>21.1%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>67.3%</td>
<td>6.4%</td>
<td>26.3%</td>
</tr>
<tr>
<td>Japan</td>
<td>67.7%</td>
<td>5.2%</td>
<td>27.1%</td>
</tr>
</tbody>
</table>

*Source: Adapted from Van IJzendoorn and Kroonenberg (1988).*
vary with culturally specific socialization goals, values, and beliefs of the parents, family, and community (Mesman, van IJzendoorn, & Sagi-Schwartz, 2016). For example, Puerto Rican mothers often use more physical control in interactions with infants, such as picking up crawling infants and placing them in desired locations, over the first year of life than do European American mothers. They actively structure interactions in ways consistent with long-term socialization goals oriented toward calm, attentive, and obedient children. Typically, attachment theory conceptualizes this type of control as insensitive, yet physical control is associated with secure attachment status at 12 months in Puerto Rican infants (but not White non-Hispanic infants) (Carlson & Harwood, 2003; Harwood, Scholmerich, Schulze, & Gonzalez, 1999). Similarly, German mothers operate according to the shared cultural belief that infants should become independent at an early age and should learn that they cannot rely on the mother's comfort at all times. German mothers may seem unresponsive to their children's crying, yet they are demonstrating sensitive childrearing within their context (Grossmann, Spangler, Suess, & Unzner, 1985). In other words, the behaviors that reflect sensitive caregiving vary with culture because they are adaptations to different circumstances (Rothbaum et al., 2000a).

In summary, attachment is an adaptive process in which infants and caregivers become attuned to each other and develop an enduring bond. Infants become attached to caregivers—mothers, fathers, and other adults—who are sensitive to their needs. Secure attachment in infancy is associated with emotional and social competence in infancy, early childhood, and even later childhood and adolescence. The attachment bond formed in infancy, whether secure or insecure, influences the child's developing internal working model of self and thereby his or her self-concept, as described in the next section.

THINKING IN CONTEXT 6.4

1. Recall from Chapter 1 that individuals are thought to play an active role in their development. How might this be true with regard to attachment? How might infants contribute to the development of attachments?

2. Infants reared in impoverished orphanages may receive little attention and experience few meaningful interactions with caregivers. What might these experiences mean for the development of attachment? What outcomes and behaviors might you expect from children reared under such conditions? In your view, what can be done to help such children?

THE SELF IN INFANCY AND TODDLERHOOD

What do babies know about themselves? When do they begin to know that they have a “self”—that they are separate from the people and things that surround them? We have discussed the challenges that researchers who study infants face. Infants cannot tell us what they perceive, think, or feel. Instead, researchers must devise ways of inferring infants’ states, feelings, and thoughts. As you might imagine, this makes it very challenging to study infants’ conceptions of self, as well as their awareness and understanding of themselves.

Self-Awareness

Maya, 4 months of age, delights in seeing that she can make the mobile above her crib move by kicking her feet. Her understanding that she can influence her world suggests that she has a sense of herself as different from her environment (Rochat, 1998). Before infants can take responsibility for their own actions, they must begin to see themselves as physically separate from the world around them.

Some developmental researchers believe that infants are born with a capacity to distinguish the self from the surrounding environment (Meltzoff, 1990). Newborns show distress at hearing a recording of another infant’s cries but do not show distress at hearing their own cries, suggesting that they can distinguish other infants’ cries from their own and thereby have a primitive notion of self (Dondi, Simion, & Caltran, 1999). Newborns’ facial imitation, that is, their ability to view another person’s facial expression and produce it (see Chapter 4), may also suggest a primitive awareness of self and others (Meltzoff, 2007; Rochat, 2013). It is unclear, however, whether these findings suggest that newborns have self-awareness because infants cannot tell us what they know.

Others argue that an awareness of oneself is not innate but emerges by 3 months of age (Neisser, 1993). Some researchers believe that this emergence is indicated by infants’ awareness of the consequences of their own actions on others (Langfur, 2013). As infants interact with people and objects, they learn that their behaviors have effects. With this awareness, they begin to experiment to see how their behaviors influence the world around them, begin to differentiate themselves from their environments, and develop a sense of self (Bigelow, 2017).

Self-Recognition

How do we know whether self-awareness is innate or develops in the early months of life? One way of
studying self-awareness in infants is to examine infants’ reactions to viewing themselves in a mirror. Self-recognition, the ability to recognize or identify the self, is assessed by the “rouge test.” In this experiment, a dab of rouge or lipstick is applied to an infant’s nose without the infant’s awareness—for example, under the pretext of wiping his or her face. The infant is then placed in front of a mirror (Bard, Todd, Bernier, Love, & Leavens, 2006). Whether the infant recognizes himself or herself in the mirror depends on cognitive development, especially the ability to engage in mental representation and hold images in one’s mind. Infants must be able to retain a memory of their own image in order to display self-recognition in the mirror task. If the infant has an internal representation of her face and recognizes the infant in the mirror as herself, she will notice the dab of rouge and reach for her own nose.

Mirror recognition develops gradually and systematically (Brandl, 2018). From 3 months of age, infants pay attention and react positively to their mirror image, and by 8 to 9 months of age, they show awareness of the tandem movement of the mirror image with themselves and play with the image, treating it as if it is another baby (Bullock & Lutkenhaus, 1990). Some 15- to 17-month-old infants show signs of self-recognition, but it is not until 18 to 24 months that most infants demonstrate self-recognition by touching their nose when they notice the rouge mark in the mirror (Cicchetti, Rogosch, Toth, & Spagnola, 1997). Does experience with mirrors influence how infants respond to the rouge test? Interestingly, infants from nomadic tribes with no experience with mirrors demonstrate self-recognition at the same ages as infants reared in surroundings with mirrors (Priel & deSchonen, 1986). This suggests that extensive experience with a mirror is not needed to demonstrate self-recognition in the mirror task. In addition, research with Canadian toddlers shows that their performance on the mirror task is unrelated to their experience with mirrors in the home (Courage, Edison, & Howe, 2004).

Mirror recognition is not the only indicator of a sense of self—and may not be the earliest indicator. A recent study suggests that self-recognition may develop before infants can succeed on the mirror task (Stapel, van Wijk, Bekkering, & Hunnius, 2017). Eighteen-month-old infants viewed photographs of their own face, the face of an unfamiliar infant, the face of their caregiver, and the face of an unfamiliar caregiver while their brain activity was registered via electroencephalography (EEG). The infants showed more brain activity in response to their own face, suggesting self-recognition, yet only half of these infants succeeded on the mirror task.

By 18 to 24 months of age, children begin to recognize themselves in pictures and refer to themselves in the pictures as “me” or by their first names (Lewis & Brooks-Gunn, 1979). One study of 20- to 25-month-old toddlers showed that 63% could pick themselves out when they were presented with pictures of themselves and two similar children (Bullock & Lutkenhaus, 1990). By 30 months of age, nearly all of the children could pick out their own picture.

With advances in self-awareness, toddlers begin to experience more complex emotions, including self-conscious emotions, such as embarrassment, shame, guilt, jealousy, and pride (Lewis & Carmody, 2008). An understanding of self is needed before children can be aware of being the focus of attention and feel embarrassment, identify with others’ concerns and feel shame, or desire what someone else has and feel jealousy toward that person. In a study of 15- to 24-month-old infants, only those who recognized themselves in the mirror looked embarrassed when an adult gave them overwhelming praise. They smiled, looked away, and covered their faces with their hands. The infants who did not recognize themselves in the mirror did not show embarrassment (Lewis, 2011). A developing sense of self and the self-conscious emotions that accompany it lead toddlers to have more complex social interactions with caregivers and others, all of which contribute to the development of self-concept.
Emerging Self-Concept

In toddlerhood, between 18 and 30 months of age, children’s sense of self-awareness expands beyond self-recognition to include a categorical self, a self-description based on broad categories such as sex, age, and physical characteristics (Stipek, Gralinski, & Kopp, 1990). Toddlers describe themselves as “big,” “strong,” “girl/boy,” and “baby/big kid.” Children use their categorical self as a guide to behavior. For example, once toddlers label themselves by gender, they spend more time playing with toys stereotyped for their own gender. Applying the categorical self as a guide to behavior illustrates toddlers’ advancing capacities for self-control.

At about the same time as toddlers display the categorical self, they begin to show another indicator of their growing self-understanding. As toddlers become proficient with language and their vocabulary expands, they begin to use many personal pronouns and adjectives, such as “I,” “me,” and “mine,” suggesting a sense of self in relation to others (Bates, 1990). Claims of possession emerge by about 21 months and illustrate children’s clear representation of “I” versus other (Levine, 1983), a milestone in self-definition and the beginnings of self-concept (Rochat, 2010).

Self-Control

Self-awareness and the emerging self-concept permit self-control, as one must be aware of oneself as separate from others to comply with requests and modify behavior in accordance with caregivers’ demands. In order to engage in self-control, the infant must be able to attend to a caregiver’s instructions, shift his or her attention from an attractive stimulus or task, and inhibit a behavior. Cortical development, specifically development of the frontal lobes, is responsible for this ability (Posner & Rothbart, 2018). Between 12 and 18 months, infants begin to demonstrate self-control by their awareness of, and compliance to, caregivers’ simple requests (Kaler & Kopp, 1990).

Although toddlers are known for asserting their autonomy, such as by saying no and not complying with a caregiver’s directive, compliance is much more common (Kochanska, 2000). Paradoxically, when parents encourage autonomous, exploratory behavior, their children are more likely to show compliance to parental instructions in toddlerhood through early childhood (Laurin & Joussemet, 2017). Secure attachment relationships and warm parenting are associated with effortful control, likely as securely attached infants feel comfortable exploring their environment, which promotes autonomy (Pallini et al., 2018). Toddlers’ capacities for self-control improve rapidly. For example, delay of gratification tasks suggest that between 18 and 36 months, toddlers become better able to control their impulses and wait before eating a treat or playing with a toy (Białecka-Pikul, Byczewska-Konieczny, Kosno, Białek, & Stępień-Nycz, 2018; Cheng, Lu, Archer, & Wang, 2018).

Infants make great strides in socioemotional development over the first 2 years of life, as summarized in Table 6.3. Infants’ advances in emotional expression and regulation represent the interaction of biological predispositions, such as inborn capacities for basic emotions and temperament, and experience—particularly parent–child interactions—the contexts in which they are raised, and the goodness of fit between infants’ needs and what their contexts provide. Infants’ gains in emotional and social development and a growing sense of self form a socioemotional foundation for the physical and cognitive changes that they will experience in the early childhood years.

### TABLE 6.3
The Developing Self

<table>
<thead>
<tr>
<th>CONCEPT</th>
<th>DESCRIPTION</th>
<th>EMERGENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-concept</td>
<td>Self-description and thoughts about the self</td>
<td>Begins as a sense of awareness in the early months of life</td>
</tr>
<tr>
<td>Self-awareness</td>
<td>Awareness of the self as separate from the environment</td>
<td>Innate or develops in the early months of life</td>
</tr>
<tr>
<td>Self-recognition</td>
<td>The ability to recognize or identify the self; typically tested in mirror recognition tasks</td>
<td>18–24 months</td>
</tr>
<tr>
<td>Categorical self</td>
<td>Self-description based on broad categories such as sex, age, and physical characteristics; indicates the emergence of self-concept</td>
<td>18–30 months</td>
</tr>
</tbody>
</table>

Source: Adapted from Butterworth (1992).
1. How might culture influence infants’ developing sense of self? Consider Western cultures that emphasize individuality and Eastern cultures that value collectivism. How might parents and other adults interact with babies and promote their developing sense of self? How might babies in each of these cultures come to understand themselves?

2. Provide examples of how infants’ temperament, emotional development, and sense of self interact. How do changes in one influence the others? How do interactions with others influence these developments?

THINKING IN CONTEXT 6.5

Eighteen-month-old Stefana toddles across the floor to her mother, gripping her leg as she cries. “Ah, come here, hija,” her mother, Perda, says as she scoops Stefana into her arms and soothes her. “Are you tired? Let’s take a nap,” Perda says. As she puts Stefana in her crib, Perda reminds herself that Stefana has come a long way.

Stefana was a challenge from day 1, as Perda’s mother puts it. She cried through the day and night on most days. It was hard to determine what caused her to cry. Was the room too loud or too cold? Did she just wake up on the “wrong side of the crib”? Stefana was unpredictable, to say the least, sometimes liking specific foods—and other times spitting them out. Sometimes she napped and often she didn’t. “Challenging or not, I’m here for my little girl,” Perda thought.

At 18 months, Stefana is still unpredictable, but she is more easily soothed. Now when she hears a loud noise, like a truck backfiring outside, she no longer wails. Instead she looks to her mother and soon goes back to playing.

The child care center teacher has noted that Stefana adjusts much more easily to her mother leaving. When Perda goes to work, Stefana cries at first but sucks her thumb and begins to play shortly thereafter. She beams and runs to Perda when she returns every afternoon.

1. How would you describe Stefana’s temperament? How do Stefana and Perda’s temperament styles interact?

2. How would you describe Stefana’s attachment style?

3. What long-term outcomes do you expect for Stefana?

4. Suppose Stefana lived in a different context, with a caregiver who shares her temperament or perhaps as an orphan in an orphanage that is understaffed and underfunded. Or perhaps she lives with a loving mother but in an unsafe, unpredictable war zone. How might these contexts contribute to Stefana’s emotional development?

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6.1 **Summarize the psychosocial tasks of infancy and toddlerhood.**

The psychosocial task of infancy is to develop a sense of trust. If parents and caregivers are sensitive to the infant’s physical and emotional needs and consistently fulfill them, the infant will develop a basic sense of trust in his or her caregivers and the world. The task for toddlers is to learn to do things for themselves and feel confident in their ability to maneuver themselves in their environment. Psychosocial development is supported by warm and sensitive parenting and developmentally appropriate expectations for exploration and behavioral control.

6.2 **Describe emotional development and the role of contextual influences on emotional development in infants and toddlers.**

Newborns display some basic emotions, such as interest, distress, and disgust. Self-conscious emotions, such as empathy, embarrassment, shame, and guilt, depend on cognitive development, as well as an awareness of self, and do not emerge until about late infancy. With development, infants use different and more effective strategies for regulating their emotions. At about 6 months old, infants begin to use social referencing. Social referencing occurs in ambiguous situations, provides children with guidance in how to interpret the event, and influences their emotional responses and subsequent actions. Parents socialize infants to respond to and display their emotions in socially acceptable ways. The emotions that are considered acceptable, as well as ways of expressing them, differ by culture and context.

6.3 **Discuss temperament and the role of goodness of fit in development during infancy and toddlerhood.**

Temperament is the characteristic way in which an individual approaches and reacts to people and situations. Children are classified into three temperament styles: easy, slow to warm up, and difficult. Temperament is influenced by the interaction of genetic predispositions, maturation, and experience. Temperament tends to be stable, but there are developmental and individual differences. An important influence on socioemotional development is the goodness of fit between the child’s temperament and the environment around him or her, especially the parent’s temperament and childrearing methods.

6.4 **Examine the development of attachment and influences on attachment stability and outcomes in infancy and toddlerhood.**

From an ethological perspective, attachment is an adaptive behavior that evolved because it ensures that the infant and caregiver will remain in close proximity, aiding the survival of the infant. The Strange Situation is used to classify infants as securely attached or insecurely attached (insecure–avoidant, insecure–resistant, or disorganized–disoriented). Secure attachments in infancy are associated with social competence and socioemotional health. Attachment patterns are seen in a wide variety of cultures around the world, but the behaviors that make up sensitive caregiving vary depending on the socialization goals, values, and beliefs of the family and community, which may vary by culture. Generally, infants become securely or insecurely attached to caregivers based on the caregiver’s ability to respond sensitively to the child’s signals.

6.5 **Explain infants and toddlers’ emerging sense of self and self-control.**

The earliest notion of self-concept, self-awareness, is evident in a primitive fashion at 3 months of age. Self-recognition, as indicated by mirror self-recognition, develops gradually and systematically in infants, but it is not until 18 to 24 months that a majority of infants demonstrate self-recognition in the mirror test. Once children have a sense of self, they can experience more complex emotions, such as self-conscious emotions. Self-awareness permits self-control, as one must be aware of oneself as an agent apart from others to comply with requests and modify behavior in accord with caregivers’ demands.

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**REVIEW QUESTIONS**

6.1 What are the two psychosocial tasks of infancy and toddlerhood, according to Erikson’s theory?

How can parents promote positive psychosocial development during infancy and toddlerhood?

6.2 What are examples of basic and self-conscious emotions?

How do infants regulate their emotions?

How do social interactions influence emotional development?

Describe cultural influences on emotional development

6.3 What is temperament?

What are three temperament styles?

What are three dimensions of temperament?

How stable is temperament?

How does goodness of fit influence emotional development?

What are cultural differences in temperament?
6.4 What is attachment? How do researchers measure infant attachment?
What are four patterns of infant attachment?
Describe cultural influences on attachment.
What are ways of promoting a secure parent-child attachment bond?

6.5 What is self-awareness, and how is it measured in infancy?
What is self-concept and when does it first emerge?
How does self-control develop?