Emotional and Social Development in Infancy and Toddlerhood

This mother has forged a close, affectionate bond with her son. Her warmth and sensitivity engender a sense of security in the baby—a vital foundation for all aspects of early development.

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As Caitlin reached 8 months of age, her parents noticed that she had become more fearful. One evening, when Carolyn and David left her with a babysitter, she wailed as they headed for the door—an experience she had accepted easily a few weeks earlier. Caitlin and Timmy’s caregiver Ginette also observed an increasing wariness of strangers. At the mail carrier’s knock at the door, both infants clung to Ginette’s legs, reaching out to be picked up.

At the same time, each baby seemed more willful. Removing an object from the hand produced little response at 5 months. But at 8 months, when Timmy’s mother, Vanessa, took away a table knife he had managed to reach, Timmy burst into angry screams and could not be consoled or distracted.

All Monica and Kevin knew about Grace’s first year was that she had been deeply loved by her destitute, homeless mother. Separation from her had left Grace in shock. At first she was extremely sad, turning away when Monica or Kevin picked her up. But as Grace’s new parents held her close, spoke gently, and satisfied her craving for food, Grace returned their affection. Two weeks after her arrival, her despondency gave way to a sunny, easygoing disposition. As her second birthday approached, she pointed to herself, exclaiming “Gwace!” and laid claim to treasured possessions: “Gwace’s teddy bear!”

Taken together, the children’s reactions reflect two related aspects of personality development during the first two years: close ties to others and a sense of self. We begin with Erikson’s psychosocial theory, which provides an overview of infant and toddler personality development. Then, as we chart the course of emotional development, we will discover why fear and anger became more apparent in Caitlin’s and Timmy’s range of emotions by the end of the first year. Our attention then turns to the origins and developmental consequences of individual differences in temperament.

Next, we take up attachment to the caregiver, the child’s first affectionate tie. We will see how the feelings of security that grow out of this important bond support the child’s exploration, self-awareness, and expanding social relationships. Finally, we consider how cognitive advances combine with social experiences to foster early self-development during the second year.

Erikson’s Theory of Infant and Toddler Personality

Our discussion in Chapter 1 revealed that the psychoanalytic perspective is no longer in the mainstream of child development research. But one of its lasting contributions is its ability to capture the essence of personality during each period of development. The most influential psychoanalytic approach is Erik Erikson’s psychosocial theory, summarized on pages 10–11. Let’s look closely at his first two stages.

Basic Trust versus Mistrust

Erikson accepted Freud’s emphasis on the importance of the parent–infant relationship during feeding, but he expanded and enriched Freud’s view. A healthy outcome during infancy, Erikson believed, depends on the quality of caregiving: relieving discomfort promptly and sensitively, holding the infant gently, waiting patiently until the baby has had enough milk, and weaning when the infant shows less interest in breast or bottle.

Erikson recognized that many factors affect parental responsiveness—personal happiness, family conditions (for example, additional young children, social supports, financial well-being), and culturally valued child-rearing practices. But when the balance of care is sympathetic and loving, the psychological conflict of the first year—basic trust versus mistrust—is resolved on the positive side. The trusting infant expects the world to be good and gratifying, so he feels confident about venturing out to explore it. The mistrustful baby cannot count on the kindness and compassion of others, so she protects herself by withdrawing from people and things around her.

Autonomy versus Shame and Doubt

With the transition to toddlerhood, Freud viewed parents’ manner of toilet training as decisive for psychological health. In Erikson’s view, toilet training is only one of many influential experiences.
The familiar refrains of newly walking, talking toddlers—“No!” “Do it myself!”—reveal that they have entered a period of budding selfhood. The conflict of autonomy versus shame and doubt is resolved favorably when parents provide young children with suitable guidance and reasonable choices. A self-confident, secure 2-year-old has parents who do not criticize or attack him when he fails at new skills—using the toilet, eating with a spoon, or putting away toys. And they meet his assertions of independence with tolerance and understanding—for example, by giving him an extra five minutes to finish his play before leaving for the grocery store. In contrast, when parents are over- or undercontrolling, the outcome is a child who feels forced and shamed and who doubts his ability to control impulses and act competently on his own.

In sum, basic trust and autonomy grow out of warm, sensitive parenting and reasonable expectations for impulse control starting in the second year. If children emerge from the first few years without sufficient trust in caregivers and without a healthy sense of individuality, the seeds are sown for adjustment problems.

### Emotional Development

Researchers have conducted careful observations to find out how babies convey their emotions and interpret those of others. They have discovered that emotions play powerful roles in organizing the attainments that Erikson regarded as so important: social relationships, exploration of the environment, and discovery of the self (Saarni et al., 2006).

#### Basic Emotions

**Basic emotions**—happiness, interest, surprise, fear, anger, sadness, and disgust—are universal in humans and other primates and have a long evolutionary history of promoting survival. Do newborns express basic emotions?

Although signs of some emotions are present, babies’ earliest emotional life consists of little more than two global arousal states: attraction to pleasant stimulation and withdrawal from unpleasant stimulation (Camras et al., 2003). Only gradually do emotions become clear, well-organized signals. The dynamic systems perspective helps us understand how this happens: Children coordinate separate skills into more effective, emotionally expressive systems as the central nervous system develops and the child’s goals and experiences change (Camras & Shuster, 2013; Camras & Shutter, 2010).

Sensitive, contingent caregiver communication, in which parents selectively mirror aspects of the baby’s diffuse emotional behavior, helps infants construct emotional expressions that more closely resemble those of adults (Gergely & Watson, 1999). With age, face, voice, and posture start to form organized patterns that vary meaningfully with environmental events. For example, 8-month-old Caitlin typically responded to her parents’ playful interaction with a joyful face, pleasant babbling, and a relaxed posture, as if to say, “This is fun!” In contrast, an unresponsive parent often evokes a sad face, fussy sounds, and a drooping body (sending the message, “I’m despondent”) or an angry face, crying, and “pick-me-up” gestures (as if to say, “Change this unpleasant event!”) (Mesman, van IJzendoorn, & Bakermans-Kranenburg, 2009; Vieites & Reeb-Sutherland, 2017). Gradually, emotional expressions become well-organized and specific—and therefore provide more precise information about the baby’s internal state.

Four basic emotions—happiness, anger, sadness, and fear—have received the most research attention. Let’s see how they develop.

**Happiness.** Happiness—expressed first in blissful smiles and later through exuberant laughter—contributes to many aspects of development. When infants achieve new skills, they smile and laugh,
displaying delight in motor and cognitive mastery. The baby’s smile encourages caregivers to smile responsively and to be affectionate and stimulating, and then the baby smiles even more (Bigelow & Power, 2014). Happiness binds parent and baby into a warm, supportive relationship that fosters the infant’s motor, cognitive, and social competencies.

During the early weeks, newborn babies smile when full, during REM sleep, and in response to gentle stroking of the skin, rocking, and a parent’s soft, high-pitched voice. By the end of the first month, infants smile at dynamic, eye-catching sights, such as a bright object jumping suddenly across their field of vision. Between 6 and 10 weeks, the parent’s communication evokes a broad grin called the **social smile** (Lavelli & Fogel, 2005). These changes parallel the development of infant perceptual capacities—in particular, sensitivity to visual patterns, including the human face (see Chapter 4).

Laughter, which typically appears around 3 to 4 months, reflects faster processing of information than smiling. But as with smiling, the first laughs occur in response to very active stimuli, such as the parent saying playfully, “I’m gonna get you!” and kissing the baby’s tummy. As infants understand more about their world, they laugh at events with subtler elements of surprise, such as a silent game of peekaboo. Soon they pick up on parents’ facial and vocal cues to humor (Mireault et al., 2015). From 5 to 7 months, in the presence of those cues, they increasingly find absurd events—such as an adult wearing a ball as a clown’s nose—funny.

Babies just a few months old smile and laugh more when interacting with familiar people, a preference that strengthens the parent–child bond. And like adults, 10- to 12-month-olds have several smiles, which vary with context—a broad, “cheek-raised” smile in response to a parent’s greeting; a reserved, muted smile for a friendly stranger; and a “mouth-open” smile during stimulating play (Messinger & Fogel, 2007). By the end of the first year, the smile has become a deliberate social signal.

**Anger and Sadness.** Newborn babies respond with generalized distress to a variety of unpleasant experiences, including hunger, changes in body temperature, and too much or too little stimulation. From 4 to 6 months into the second year, angry expressions increase in frequency and intensity (Braungart-Rieker, Hill-Soderlund, & Karrass, 2010). Older infants also react with anger in a wider range of situations—when an object is taken away, an expected pleasant event does not occur, the caregiver leaves for a brief time, or they are put down for a nap (Camras et al., 1992; Stenberg & Campos, 1990; Sullivan & Lewis, 2003).

Why do angry reactions increase with age? As infants become capable of intentional behavior (see Chapter 5), they want to control their own actions and the effects they produce (Mascolo & Fischer, 2007). Furthermore, older infants are better at identifying who caused them pain or removed a toy. Their anger is particularly intense when a caregiver from whom they have come to expect warm behavior causes discomfort. And increased parental limit setting once babies crawl and walk contributes to babies’ angry responses (Roben et al., 2012). The rise in anger is also adaptive. Independent movement enables an angry infant to defend herself or overcome an obstacle to obtain a desired object. Finally, anger motivates caregivers to relieve the baby’s distress.

Although expressions of sadness also occur in response to pain, removal of an object, and brief separations, they are less frequent than anger (Alessandri, Sullivan, & Lewis, 1990). But when caregiver–infant communication is seriously disrupted, infant sadness is common—a condition that impairs all aspects of development (see the Biology and Environment box on the following page).

**Fear.** Like anger, fear rises from the second half of the first year into the second year (Braungart-Rieker, Hill-Soderland, & Karrass, 2010; Brooker et al., 2013). Older infants hesitate before playing with a new toy, and newly crawling infants soon back away from heights (see Chapter 4). But the most frequent expression of fear is to unfamiliar adults, a response called **stranger anxiety.** Many infants and toddlers are quite wary of strangers,
Parental Depression and Child Development

A bout 8 to 10 percent of women experience chronic depression—mild to severe feelings of sadness, distress, and withdrawal that continue for months or years. In a similar percentage of mothers, depression emerges or strengthens after childbirth but fails to subside (Paulson & Bazemore, 2010). This is called postpartum depression.

Although it is less recognized and studied, fathers, too, experience chronic depression. About 5 percent of fathers report symptoms after the birth of a child (Gutierrez-Galve, 2015). Genetic makeup increases the risk of depressive illness, but social and cultural factors are also involved.

Maternal Depression

During Julia’s pregnancy, her husband, Kyle, showed so little interest in the baby that Julia worried that having a child might be a mistake. Shortly after Lucy was born, Julia’s mood plunged. She felt anxious and weepy, overwhelmed by Lucy’s needs, and angry at loss of control over her own schedule. When Julia approached Kyle about her own fatigue and his unwillingness to help with the baby, he snapped that she was overreacting.

Julia’s depressed mood quickly affected her baby. In the weeks after birth, infants of depressed mothers sleep poorly, are less attentive to their surroundings, and have elevated levels of the stress hormone cortisol (Fernandes et al., 2015; Goodman et al., 2011; Natsuaki et al., 2014). The more extreme the depression and the greater the number of stressors in a mother’s life (such as marital discord, little or no social support, and poverty), the more the parent–child relationship suffers (Field, 2011; Vaever et al., 2015). By age 6 months, Lucy showed symptoms common in babies of depressed mothers—delays in motor and cognitive development, poor emotion regulation, an irritable mood, and attachment difficulties (Ibanez et al., 2015; Lefkovics, Baji, & Rigó, 2014; Vedova, 2014).

Depressed mothers view their babies negatively, which contributes to their inept caregiving (Lee & Hans, 2015). As their children get older, lack of warmth and involvement is often accompanied by inconsistent discipline—sometimes lax, at other times too forceful (Thomas et al., 2015). As we will see in later chapters, children who experience these maladaptive parenting practices often have serious adjustment problems. Some withdraw into a depressive mood themselves; others become impulsive and aggressive.

Paternal Depression

In a study of a large representative sample of British parents and babies, researchers assessed depressive symptoms of fathers shortly after birth and again the following year. Then they tracked the children’s development into the preschool years (Ramchandani et al., 2008). Persistent paternal depression was, like maternal depression, a strong predictor of child behavior problems—especially overactivity, defiance, and aggression in boys.

Paternal depression is linked to frequent marital and father–child conflict as children grow older (Gutierrez-Galve et al., 2015). Over time, children subjected to parental negativity develop a pessimistic world view—one in which they lack self-confidence and perceive their parents and other people as threatening. Children who constantly feel in danger are especially likely to become overly aroused in stressful situations, easily losing control in the face of cognitive and social challenges (Sturge-Apple et al., 2008). Although children of depressed parents may inherit a tendency toward emotional and behavior problems, quality of parenting is a major factor in their adjustment.

Interventions

Early treatment is vital to prevent parental depression from interfering with the parent–child relationship. Julia’s doctor referred her to a therapist, who helped Julia and Kyle with their marital problems. At times, antidepressant medication is prescribed.

In addition to alleviating parental depression, therapy that encourages depressed parents to engage in emotionally positive, responsive caregiving is vital for reducing developmental problems (Goodman et al., 2015). When a depressed parent does not respond easily to treatment, a warm relationship with the other parent or another caregiver can safeguard children’s development.

although the reaction varies with temperament (some babies are generally more fearful), past experiences with strangers, and the current situation. When an unfamiliar adult picks up the infant, stranger anxiety is likely. But if the adult sits still while the baby moves around and a parent is nearby, infants often show positive and curious behavior (Horner, 1980). The stranger’s style of interaction—expressing warmth, holding out an attractive toy, playing a familiar game, and approaching slowly rather than abruptly—reduces the baby’s fear.
Cross-cultural research reveals that infant-rearing practices can modify stranger anxiety. Among the Efe hunters and gatherers of the Republic of Congo, where the maternal death rate is high, infant survival is safeguarded by a collective caregiving system in which, starting at birth, Efe babies are passed from one adult to another (Tronick, Morelli, & Ivey, 1992). Consequently, Efe infants show little stranger anxiety.

The rise in fear after age 6 months keeps newly mobile babies’ enthusiasm for exploration in check. Once wariness develops, infants use the familiar caregiver as a secure base, or point from which to explore, venturing into the environment and then returning for emotional support. As part of this adaptive system, encounters with strangers lead to two conflicting tendencies: approach (indicated by interest and friendliness) and avoidance (indicated by fear). The infant’s behavior is a balance between the two.

As toddlers discriminate more effectively between threatening and nonthreatening people and situations, stranger anxiety and other fears of the first two years decline. Fear also wanes as toddlers acquire more strategies for coping with it, as we will see when we discuss emotional self-regulation.

Understanding and Responding to the Emotions of Others

Infants’ emotional expressions are closely tied to their ability to interpret the emotional cues of others. We have seen that in the first few months, babies match the feeling tone of the caregiver in face-to-face communication. Around 3 months, they become sensitive to the structure and timing of face-to-face interactions (see Chapter 5, page 164). When they gaze, smile, or vocalize, they now expect their social partner to respond in kind, and they reply with positive vocal and emotional reactions (Bigelow & Power, 2014; Markova & Legerstee, 2006). Recall from Chapter 4 (pages 122–123) that out of this early imitative communication, they start to view others as “like me”—an awareness believed to lay the foundation for understanding others’ thoughts and feelings (Meltzoff, 2013).

At 4 to 5 months, infants distinguish positive from negative emotion in voices, and soon after, in facial expressions, gradually discriminating a wider range of emotions (see Chapter 4). Responding to emotional expressions as organized wholes indicates that these signals are becoming meaningful to babies. As skill at establishing joint attention improves, infants realize that an emotional expression not only has meaning but is also a meaningful reaction to a specific object or event (Thompson, 2015).

Once these understandings are in place, beginning at 8 to 10 months, infants engage in social referencing—actively seeking emotional information from a trusted person in an uncertain situation (Mumme et al., 2007). Many studies show that the caregiver’s emotional expression (happy, angry, or fearful) influences whether a 1-year-old will be wary of strangers, play with a new toy, laugh at a humorous event, or cross the deep side of the visual cliff (see pages 174–175) (de Rosnay et al., 2006; Mireault et al., 2014; Stenberg, 2003; Striano & Rochat, 2000).

As toddlers start to appreciate that others’ emotional reactions may differ from their own, social referencing allows them to compare their own and others’ assessments of events. In one study, an adult showed 14- and 18-month-olds broccoli and crackers and acted delighted with one food but disgusted with the other (Repacholi & Gopnik, 1997). When asked to share the food, 18-month-olds offered the adult whichever food she appeared to like, regardless of their own preferences.

In sum, in social referencing, toddlers move beyond simply reacting to others’ emotional messages. They use those messages to evaluate the safety and security of their surroundings, to guide their own actions, and to gather information about others’ intentions and preferences.

Emergence of Self-Conscious Emotions

Besides basic emotions, humans are capable of a second, higher-order set of feelings, including guilt, shame, embarrassment, envy, and pride. These are called self-conscious emotions because each involves injury to or enhancement of our sense of self. We feel guilt when we have harmed someone and want to correct the wrongdoing. Envy arises when we desire something that another possesses, so we try to restore our sense of self-worth by securing that possession. When we are ashamed or embarrassed, we have negative feelings about our behavior, and we want to retreat so others will no longer notice our failings. In contrast, pride reflects delight in the self’s achievements,
and we are inclined to tell others what we have accomplished and to take on further challenges (Lewis, 2014).

Self-conscious emotions appear in the middle of the second year, as 18- to 24-month-olds become firmly aware of the self as a separate, unique individual. Toddlers show shame and embarrassment by lowering their eyes, hiding their head, and hiding their face with their hands. They show guiltlike reactions, too. After noticing Grace’s unhappiness, 22-month-old Caitlin returned a toy she had grabbed and patted her upset playmate. Pride and envy also emerge around age 2 (Barrett, 2005; Garner, 2003; Lewis, 2014).

Besides self-awareness, self-conscious emotions require an additional ingredient: adult instruction in when to feel proud, ashamed, or guilty. Parents begin this tutoring early when they say, “Look how far you can throw that ball!” or “You should feel ashamed for grabbing that toy!” Self-conscious emotions play important roles in children’s achievement-related and moral behaviors. The situations in which adults encourage these feelings vary from culture to culture. In Western nations, most children are taught to feel pride in personal achievement. In cultures such as China and Japan, which promote an interdependent self, calling attention to individual success evokes embarrassment and self-effacement. And violating cultural standards by failing to show concern for others—a parent, a teacher, or an employer—sparks intense shame (Lewis, 2014).

Beginnings of Emotional Self-Regulation

Besides expressing a wider range of emotions, infants and toddlers begin to manage their emotional experiences. Emotional self-regulation refers to the strategies we use to adjust our emotional state to a comfortable level of intensity so we can accomplish our goals (Thompson & Goodvin, 2007). When you remind yourself that an anxiety-provoking event will be over soon, suppress your anger at a friend’s behavior, or decide not to see a scary horror film, you are engaging in emotional self-regulation.

Emotional self-regulation requires voluntary, effortful management of emotions. It improves rapidly during the first few years, as the result of a dynamic system of influences that include development of the prefrontal cortex and its networks of connections to brain areas involved in emotional reactivity and control; and support from caregivers, who help children manage intense emotion and, as cognitive and language skills improve, teach them strategies for doing so on their own (Rothbart, Posner, & Kieras, 2006; Thompson, 2015).

In the early months, infants are easily overwhelmed by intense emotion. They depend on soothing interventions of caregivers—being lifted to the shoulder, rocked, gently stroked, and talked to softly—for distraction and reorienting of attention.

More effective functioning of the prefrontal cortex increases the baby’s tolerance for stimulation. Between 2 and 4 months, caregivers build on this capacity by initiating face-to-face play and attention to objects. In these interactions, parents arouse pleasure in the baby while adjusting the pace of their behavior so the infant does not become distressed (Kopp & Neufeld, 2003). As a result, the baby’s tolerance for stimulation increases further.

From 3 months on, the ability to shift attention away from unpleasant events helps infants control distress (Ekas, Lickenbrock, & Braungart-Rieker, 2013). And crawling and walking, which permit babies to approach or retreat from various situations, contribute to more effective self-regulation in the second half of the first year.

Infants whose parents “read” and respond contingently and sympathetically to their emotional cues tend to be less fussy and fearful, to express more pleasurable emotion, to be more interested in exploration, and to be easier to soothe (Braungart-Rieker, Hill-Soderlund, & Karrass, 2010; Crockenberg & Leerkes, 2004). In contrast, parents who respond impatiently or angrily or who wait to intervene until the infant has become extremely agitated reinforce the baby’s rapid rise to intense distress. Consequently, brain structures that buffer stress may fail to develop properly, resulting in an anxious, reactive child who has a reduced capacity for managing emotional problems (Blair & Raver, 2012; Frankel et al., 2015).
Caregivers also provide lessons in socially approved ways of expressing feelings. Beginning in the first few months, parents encourage infants to suppress negative emotion by imitating their expressions of interest, happiness, and surprise more often than their expressions of anger and sadness. Boys get more of this training than girls, in part because boys have a harder time regulating negative emotion (Else-Quest et al., 2006; Malatesta et al., 1986). As a result, the well-known sex difference—females as emotionally expressive and males as emotionally controlled—is promoted at a tender age.

Cultures that highly value social harmony place particular emphasis on socially appropriate emotional behavior while discouraging expression of individual feelings. Compared with Western parents, Chinese and Japanese parents, and parents in many non-Western village cultures, discourage the expression of strong emotion in babies. Nso mothers of rural Cameroon, for example, spend less time imitating infant social smiling than do German mothers, and Nso mothers are especially quick to quiet infant distress through soothing and breastfeeding. Chinese, Japanese, and Nso babies, in turn, smile, laugh, and cry less than their Western agemates (Friedlmeier, Corapci, & Cole, 2011; Gartstein et al., 2010; Kärtnner, Holodynski, & Wörmann, 2013).

Toward the end of the second year, a vocabulary for talking about feelings—“happy,” “love,” “surprised,” “scary,” “yucky,” “mad”—develops rapidly, but toddlers are not yet good at using language to manage their emotions. Temper tantrums tend to occur when an adult rejects their demands or they are otherwise frustrated, particularly when toddlers are fatigued or hungry (Mascolo & Fischer, 2007). When parents are sympathetic but set limits (by not giving in to tantrums), distract by offering acceptable alternatives, and later suggest better ways to solve the initial problem, children display more effective anger-regulation strategies and social skills during the preschool years (Lecuyer & Houck, 2006; Scrimgeour, Davis, & Buss, 2016).

**ASK YOURSELF**

**CONNECT** Why do children of depressed parents have difficulty regulating emotion (see page 175)? What implications do their weak self-regulatory skills have for their response to cognitive and social challenges?

**APPLY** At age 14 months, Reggie built a block tower and gleefully knocked it down. At age 2, he called to his mother and pointed proudly to his tall block tower. What explains this change in Reggie’s emotional behavior?

**REFLECT** How do you typically manage negative emotion? How might your early experiences, gender, and cultural background have influenced your style of emotional self-regulation?

**Temperament and Development**

From early infancy, Caitlin’s sociability was unmistakable. She smiled and laughed while interacting with adults and, in her second year, readily approached other children. Meanwhile, Monica marveled at Grace’s calm, relaxed disposition. At 19 months, she sat contentedly in a highchair through a two-hour family celebration at a restaurant. In contrast, Timmy was active and distractible. Vanessa found herself chasing him as he dropped one toy, moved on to the next, and climbed on chairs and tables.

When we describe one person as cheerful and “upbeat,” another as active and energetic, and still others as calm, cautious, or prone to angry outbursts, we are referring to temperament—early-appearing, stable individual differences in reactivity and self-regulation. Reactivity refers to quickness and intensity of emotional arousal, attention, and motor activity. Self-regulation, as we have seen, refers to strategies that modify that reactivity (Rothbart, 2011; Rothbart & Bates, 2006). The psychological traits that make up temperament are believed to form the cornerstone of the adult personality.

In 1956, Alexander Thomas and Stella Chess initiated the New York Longitudinal Study, a groundbreaking investigation of the development of temperament that followed 141 children from early infancy well into adulthood. Results showed that temperament can increase a child’s chances of experiencing psychological problems or, alternatively, protect a child from the negative effects of
a highly stressful home life. At the same time, Thomas and Chess (1977) discovered that parenting practices can modify children’s temperaments considerably.

These findings stimulated a growing body of research on temperament, including its stability, biological roots, and interaction with child-rearing experiences. Let’s begin to explore these issues by looking at the structure, or makeup, of temperament and how it is measured.

### The Structure of Temperament

Thomas and Chess’s model of temperament inspired all others that followed. When detailed descriptions of infants’ and children’s behavior obtained from parent interviews were rated on nine dimensions of temperament, certain characteristics clustered together, yielding three types of children:

- **The easy child** (40 percent of the sample) quickly establishes regular routines in infancy, is generally cheerful, and adapts easily to new experiences.
- **The difficult child** (10 percent of the sample) is irregular in daily routines, is slow to accept new experiences, and tends to react negatively and intensely.
- **The slow-to-warm-up child** (15 percent of the sample) is inactive, shows mild, low-key reactions to environmental stimuli, is negative in mood, and adjusts slowly to new experiences.

Note that 35 percent of the children did not fit any of these categories. Instead, they showed unique blends of temperamental characteristics.

Difficult children are at high risk for adjustment problems—both anxious withdrawal and aggressive behavior in early and middle childhood (Bates, Wachs, & Emde, 1994; Ramos et al., 2005). Nevertheless, the difficult label has been criticized because judgments of child difficulty vary widely across caregivers and cultures. Although slow-to-warm-up children present fewer problems, they tend to show excessive fearfulness and slow, constricted behavior in the late preschool and school years, when they are expected to respond actively and quickly in classrooms and peer groups (Chess & Thomas, 1984; Schmitz et al., 1999).

Today, the most influential model of temperament is Mary Rothbart’s, described in Table 6.1. It combines related traits proposed by Thomas and Chess and other researchers, yielding a concise list of six dimensions that represent the three underlying components included in the definition of temperament: (1) **emotion** (“fearful distress,” “irritable distress,” “positive affect”), (2) **attention** (“attention span/persistence”), and (3) **action** (“activity level”). Individuals differ not just in their reactivity on each dimension but also in the self-regulatory dimension of temperament, **effortful control**—the capacity to voluntarily suppress a dominant response in order to plan and execute a more adaptive response (Rothbart, 2011, 2015; Rothbart & Bates, 2006). Variations in effortful control are evident in how effectively a child can focus and shift attention, inhibit impulses, and manage negative emotion.

The capacity for effortful control in early childhood predicts favorable development and adjustment in diverse cultures, with some studies showing long-term effects into adolescence and adulthood (Chen & Schmidt, 2015). Positive outcomes include persistence, task mastery, academic achievement, cooperation, moral maturity (such as concern about wrongdoing and willingness to apologize), and social behaviors of cooperation, sharing, and helpfulness (Eisenberg, 2010; Koschna & Akson, 2006; Posner & Rothbart, 2007; Valiente, Lemery-Chalfant, & Swanson, 2010).

Turn back to page 151 in Chapter 5 to review the concept of executive function, and note its resemblance to effortful control. These converging concepts, which are

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<th>TABLE 6.1</th>
<th>Rothbart’s Model of Temperament</th>
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<td><strong>DIMENSION</strong></td>
<td><strong>DESCRIPTION</strong></td>
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<tr>
<td><strong>REACTIVITY</strong></td>
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<tr>
<td>Activity level</td>
<td>Level of gross-motor activity</td>
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<tr>
<td>Attention span/persistence</td>
<td>Duration of orienting or interest</td>
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<tr>
<td>Fearful distress</td>
<td>Wariness and distress in response to intense or novel stimuli, including time to adjust to new situations</td>
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<td>Irritable distress</td>
<td>Extent of fussing, crying, and distress when desires are frustrated</td>
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<td>Positive affect</td>
<td>Frequency of expression of happiness and pleasure</td>
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<td><strong>SELF-REGULATION</strong></td>
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<tr>
<td>Effortful control</td>
<td>Capacity to voluntarily suppress a dominant, reactive response in order to plan and execute a more adaptive response</td>
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<td>In the first two years, called <em>orienting/regulation</em>, which refers to the capacity to engage in self-soothing, shift attention from unpleasant events, and sustain interest for an extended time</td>
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associated with similar positive outcomes, reveal that the same mental activities lead to effective regulation in both the cognitive and emotional/social domains.

**Measuring Temperament**

Temperament is often assessed through interviews or questionnaires given to parents. Behavior ratings by pediatricians, teachers, and others familiar with the child and laboratory observations by researchers have also been used. Parental reports are convenient and take advantage of parents’ depth of knowledge about their child across many situations (Chen & Schmidt, 2015). Although information from parents has been criticized as being biased, parental reports are moderately related to researchers’ observations of children’s behavior (Majdandžić & van den Boom, 2007; Mangelsdorf, Schoppe, & Buur, 2000). And parent perceptions are useful for understanding how parents view and respond to their child.

Observations by researchers avoid the subjectivity of parental reports but can lead to other inaccuracies. In homes, observers find it hard to capture rare but important events, such as infants’ response to frustration. And in the unfamiliar laboratory setting, fearful children may become too upset to complete the session (Rothbart, 2011). Still, researchers can better control children’s experiences in the lab. And they can conveniently combine observations of behavior with neurobiological measures to gain insight into the biological bases of temperament.

Most neurobiological research has focused on children who fall at opposite extremes of the positive-affect and fearful-distress dimensions of temperament: *inhibited*, or *shy*, children, who react negatively to and withdraw from novel stimuli, and *uninhibited*, or *sociable*, children, who display positive emotion to and approach novel stimuli. As the Biology and Environment box on the following page reveals, biologically based reactivity differentiates children with inhibited and uninhibited temperaments.

**Stability of Temperament**

Young children who score low or high on attention span, irritability, sociability, shyness, or effortful control tend to respond similarly when assessed again several months to a few years later and, occasionally, even into the adult years (Casalin et al., 2012; Caspi et al., 2003; Kochanska & Knaack, 2003; Majdandžić & van den Boom, 2007; van den Akker et al., 2010). However, the overall stability of temperament is low in infancy and toddlerhood and only moderate from the preschool years on (Putnam, Samson, & Rothbart, 2000). A major reason is that temperament itself develops with age. To illustrate, let’s look at irritability. Recall from Chapter 3 that the early months are a period of fussing and crying for most babies. As infants better regulate their attention and emotions, many who initially seemed irritable become calm and content.

Long-term prediction from early temperament is best achieved after age 3, when children’s styles of responding are better established (Dyson et al., 2015; Roberts & DelVecchio, 2000). In line with this idea, between ages 2½ and 3, children improve substantially on a wide range of tasks requiring effortful control, such as waiting for a reward, succeeding at games like “Simon Says,” and selectively attending to one stimulus while ignoring competing stimuli (Kochanska, Murray, & Harlan, 2000; Li-Grining, 2007). Researchers believe that around this time, areas in the prefrontal cortex involved in suppressing impulses develop rapidly (Rothbart, 2011).

Nevertheless, the ease with which children manage their reactivity depends on the type and strength of the reactive emotion. Compared to angry, irritable toddlers, fearful toddlers generally show greater improvement in effortful control by the preschool years (Bridgett et al., 2009; Kochanska & Knaack, 2003). Child rearing is also important in modifying reactivity. Young children with either fearful or irritable temperaments who experience patient, supportive parenting gain most in capacity to manage their emotions (Kim & Kochanska, 2012; Warren & Simmens, 2005). But if exposed to insensitive or unresponsive parenting, these emotionally negative children are especially likely to score low in effortful control.

In sum, many factors affect the extent to which a child’s temperament remains stable, including development of the biological systems on which temperament is based, the child’s capacity for effortful control, the success of her efforts, and child-rearing experiences. With these ideas in mind, let’s turn to genetic and environmental contributions to temperament and personality.
Development of Shyness and Sociability

Two 4-month-old babies, Larry and Mitch, visited the laboratory of Jerome Kagan, who observed their reactions to a variety of unfamiliar experiences. When exposed to new sights and sounds, such as a moving mobile decorated with colorful toys, Larry moved his arms and legs with agitation and cried. In contrast, Mitch remained relaxed and quiet, smiling and cooing.

As toddlers, Larry and Mitch returned to the lab, where they experienced several procedures designed to induce uncertainty. Electrodes were placed on their bodies and blood pressure cuffs on their arms to measure heart rate; toy robots, animals, and puppets moved before their eyes; and unfamiliar people behaved in unexpected ways. While Larry whimpered and quickly withdrew, Mitch watched with interest, laughed, and approached the toys and strangers.

On a third visit, at age 4½, Larry barely talked or smiled during an interview with an unfamiliar adult. In contrast, Mitch expressed pleasure at each new activity. In a playroom with two unfamiliar peers, Larry pulled back and watched, while Mitch made friends quickly.

In longitudinal research on several hundred European-American infants followed into adolescence, Kagan found that about 20 percent of 4-month-olds were, like Larry, easily upset by novelty; another 40 percent, like Mitch, were comfortable, even delighted, with new experiences. About 20 to 25 percent of these extreme groups retained their temperamental styles as they grew older (Kagan, 2003; Kagan et al., 2007). But most children’s dispositions became less extreme over time. Genetic makeup and child-rearing experiences jointly influenced stability and change in temperament.

Neurobiological Correlates of Shyness and Sociability

Individual differences in arousal of the amygdala, an inner brain structure devoted to processing novelty and emotional information, contribute to these contrasting temperaments. In shy, inhibited children, novel stimuli easily excite the amygdala and its connections to the prefrontal cortex and the sympathetic nervous system, which prepares the body to act in the face of threat. In sociable, uninhibited children, the same level of stimulation evokes minimal neural excitation (Schwartz et al., 2012). And additional neurobiological responses mediated by the amygdala distinguish these two emotional styles:

- **Heart rate.** From the first few weeks of life, the heart rates of shy children are consistently higher than those of sociable children, and they speed up further in response to unfamiliar events (Schmidt et al., 2007; Snidman et al., 1995).
- **Cortisol.** Saliva concentrations of the stress hormone cortisol tend to be higher, and to rise more in response to a stressful event, in shy than in sociable children (Schmidt et al., 1999; Zimmermann & Stansbury, 2004).
- **Pupil dilation, blood pressure, and skin surface temperature.** Compared with sociable children, shy children show greater pupil dilation, rise in blood pressure, and cooling of the fingertips when faced with novelty (Kagan et al., 2007).

Furthermore, shy children show greater EEG activity in the right than in the left frontal lobe of the cerebral cortex, which is associated with negative emotional reactivity; sociable children show the opposite pattern (Fox et al., 2008). Neural activity in the amygdala, which is transmitted to the frontal lobes, probably contributes to these differences.

Child-Rearing Practices

According to Kagan, most extremely shy or sociable children inherit a physiology that biases them toward a particular temperamental style (Kagan et al., 2013d). Yet experience, too, has a powerful impact.

Warm, supportive parenting reduces shy infants’ and preschoolers’ intense reactivity to novelty, whereas cold, intrusive parenting heightens anxiety (Davis & Buss, 2012; Kiel, Premo, & Buss, 2016). And if parents overprotect infants and young children who dislike novelty, they make it harder for the child to overcome an urge to retreat. Parents who make appropriate demands for their child to approach new experiences help shy youngsters develop strategies for regulating fear (Chronis-Tuscano et al., 2015).

When inhibition persists, it leads to excessive cautiousness, low self-esteem, and loneliness. In adolescence, it increases the risk of severe anxiety, depression, unrealistic worries about physical harm, and social phobia—intense fear of being humiliated in social situations (Kagan, 2013d; Karevold et al., 2012). For inhibited children to acquire effective social skills, parenting must be tailored to their temperaments—a theme we will encounter again in this and later chapters.
Genetic and Environmental Influences

Identical twins are more similar than fraternal twins across a wide range of temperamental and personality traits (Caspi & Shiner, 2006; Krueger & Johnson, 2008; Roisman & Fraley, 2006). In Chapter 2, we noted that heritability estimates derived from twin studies suggest a moderate role for genetic factors in temperament and personality: About half of individual differences have been attributed to differences in genetic makeup.

Although genetic influences on temperament are clear, environment is also powerful. Furthermore, heredity and environment often jointly contribute to temperament, since a child’s approach to the world can be intensified or lessened by experience. To illustrate, let’s begin by looking at ethnic and gender differences.

Ethnic and Gender Differences. Compared with European-American infants, Chinese and Japanese babies tend to be less active, irritable, vocal, more easily soothed when upset, and better at quieting themselves (Kagan, 2013d; Lewis, Ramsay, & Kawakami, 1993). East Asian babies are also more attentive and less distractible, and as 2-year-olds, they are more compliant and cooperative with adults and higher in effortful control—for example, able to wait longer to play with an attractive toy (Chen et al., 2003; Garstein et al., 2006). At the same time, Chinese and Japanese babies are more fearful, displaying more anxiety in an unfamiliar playroom and when interacting with a stranger (Chen, Wang, & DeSouza, 2006).

These variations may have genetic roots, but they are supported by cultural beliefs and practices, yielding gene–environment correlations (see page 63 in Chapter 2). Japanese mothers usually say that babies come into the world as independent beings who must learn to rely on their parents through close physical contact. European-American mothers, in contrast, typically believe that they must wean the baby away from dependency toward autonomy. Consistent with these beliefs, Asian mothers interact gently, soothingly, and gesturally with their babies, whereas European-American mothers use a more active, stimulating, verbal approach (Kagan, 2010). Also, recall from our discussion of emotional self-regulation that Chinese and Japanese adults discourage babies from expressing strong emotion, which contributes further to their infants’ tranquility.

Similarly, gender differences in temperament are evident as early as infancy, suggesting a genetic foundation. Boys are more active and daring, less fearful, more irritable when frustrated, and more impulsive—factors that contribute to their higher injury rates throughout childhood and adolescence. And girls’ large advantage in effortful control undoubtedly contributes to their greater compliance and cooperativeness, better school performance, and lower incidence of behavior problems (Else-Quest, 2012; Olino et al., 2013). At the same time, parents more often encourage their young sons to be physically active and their daughters to seek help and physical closeness—through activities they encourage and through more positive reactions when their child exhibits temperamental traits consistent with gender stereotypes (Bryan & Dix, 2009; Hines, 2015).

Differential Susceptibility to Rearing Experiences. Earlier we mentioned findings indicating that emotionally reactive toddlers function worse than other children when exposed to inept parenting, yet benefit most from good parenting. Researchers have become increasingly interested in temperamental differences in children’s susceptibility (or responsiveness) to environmental influences (Pluess & Belsky, 2011). Using molecular genetic testing, they are clarifying how these gene–environment interactions operate.

Consistently, young children with a chromosome 7 gene containing a certain repetition of base pairs called short 5-HTTLPR—which interferes with functioning of the inhibitory neurotransmitter serotonin and, thus, greatly increases the risk of self-regulation difficulties—are highly susceptible to effects of parenting quality. Those exposed to maladaptive parenting readily develop externalizing problems. But when parenting is kind and supportive,
children with this gene fare exceedingly well in adjustment (Davies & Cicchetti, 2014; Kochanska et al., 2011, 2015; van IJzendoorn, Belsky, & Bakermans-Kranenburg, 2012). Among children without the 5-HTTLPR genotype, parenting—whether positive or negative—has minimal impact on externalizing symptoms.

As these outcomes reveal, young children with the short 5-HTTLPR gene show unusually high early plasticity (see page 6 in Chapter 1 to review). Because children with this “susceptibility attribute” fare better than other children when parenting is supportive, they are likely to benefit most from interventions aimed at promoting responsive child rearing.

**Siblings’ Unique Experiences.** In families with several children, an additional influence on temperament is at work: When parents are asked to describe each of their children’s personalities, they often look for differences between siblings: “She’s a lot more active,” “He’s more sociable,” “She’s far more persistent.” As a result, parents often regard siblings as more distinct than other observers do.

In a large study of 1- to 3-year-old twin pairs, parents rated identical twins as less alike in temperament than researchers’ ratings indicated. And whereas researchers rated fraternal twins as moderately similar, parents viewed them as somewhat opposite in temperament (Saudino, 2003). This tendency to emphasize each child’s unique qualities likely heightens parents’ differential treatment of siblings.

Besides unique experiences within the family, siblings have distinct experiences with teachers, peers, and others in their community that affect personality development. And as we will see in Chapter 10, in middle childhood and adolescence, siblings often seek ways to differ from each other. For all these reasons, both identical and fraternal twins tend to become increasingly dissimilar in personality with age (Loehlin & Martin, 2001). In sum, temperament and personality can be understood only in terms of complex interdependencies between genetic and environmental factors.

**Temperament and Child Rearing: The Goodness-of-Fit Model**

Thomas and Chess (1977) proposed a **goodness-of-fit model** to explain how temperament and environment can together produce favorable outcomes. Goodness of fit involves creating child-rearing environments that recognize each child’s temperament while simultaneously encouraging more adaptive functioning. If a child’s disposition interferes with learning or getting along with others, adults must gently but consistently counteract the child’s maladaptive style.

Difficult children (who withdraw from new experiences and react negatively and intensely) frequently experience parenting that fits poorly with their dispositions. As infants, they are less likely to receive sensitive caregiving. By the second year, their parents tend to resort to angry, punitive discipline, which undermines the development of effortful control. As the child reacts with defiance and disobedience, parents become increasingly stressed. As a result, they continue their coercive tactics and also discipline inconsistently, at times rewarding the child’s noncompliance by giving in to it (Lee et al., 2012; Paulussen-Hoogeboom et al., 2007; Pesonen et al., 2008). These practices sustain and even increase the child’s irritable, conflict-ridden style.

In contrast, when parents are positive and sensitive, which helps infants and toddlers—especially those who are emotionally reactive—regulate emotion, difficulties decline by age 2 or 3 (Raikes et al., 2007). In toddlerhood and childhood, parental sensitivity, support, clear expectations, and limits foster effortful control, also reducing the likelihood that difficulties will persist and lead to emotional and social difficulties (Cipriano & Stifter, 2010).

An effective match between rearing conditions and child temperament is best accomplished early, before unfavorable temperament—environment relationships produce maladjustment. The goodness-of-fit model reminds us that children have unique dispositions that adults must accept. Parents can neither take full credit for their children’s virtues nor be blamed for all their faults. But parents can turn an environment that exaggerates a child’s problems into one that builds on the child’s strengths. As we will see next, goodness of fit is also at the heart of infant–caregiver attachment. This first intimate relationship grows out of interaction between parent and baby, to which the emotional styles of both partners contribute.
ASK YOURSELF

CONNECT Explain how findings on ethnic and gender differences in temperament illustrate gene–environment correlation, discussed on pages 63–64 in Chapter 2.

APPLY Mandy and Jeff are parents of 2-year-old inhibited Sam and 3-year-old irritable Maria. Explain the importance of effortful control to Mandy and Jeff, and suggest ways they can strengthen it in each of their children.

REFLECT How would you describe your temperament as a young child? Do you think your temperament has remained stable, or has it changed? What factors might be involved?

Attachment is the strong affectionate tie we have with special people in our lives that leads us to feel pleasure when we interact with them and to be comforted by their nearness in times of stress. By the second half-year, infants have become attached to familiar people who have responded to their needs. Consider how babies of this age single out their parents for special attention: When the parent enters the room, the baby breaks into a broad, friendly smile. When she picks him up, he pats her face, explores her hair, and snuggles against her. When he feels anxious or afraid, he crawls into her lap and clings closely.

Attachment has also been the subject of intense theoretical debate. Recall that the psychoanalytic perspective regards feeding as the central context in which caregivers and babies build this close emotional bond. Behaviorism, too, emphasizes the importance of feeding, but for different reasons. According to a well-known behaviorist explanation, infants learn to prefer the mother’s soft caresses, warm smiles, and tender words because these events are paired with tension relief as she satisfies the baby’s hunger.

Although feeding is an important context for building a close relationship, attachment does not depend on hunger satisfaction. In the 1950s, a famous experiment showed that rhesus monkeys reared with terry-cloth and wire-mesh “surrogate mothers” clung to the soft terry-cloth substitute, even though the wire-mesh “mother” held the bottle and infants had to climb onto it to be fed (Harlow & Zimmerman, 1959). Human infants, too, become attached to family members who seldom feed them, including fathers, siblings, and grandparents. And toddlers in Western cultures who sleep alone and experience frequent daytime separations from their parents sometimes develop strong emotional ties to cuddly objects, such as blankets and teddy bears, that play no role in infant feeding!

Bowlby’s Ethological Theory

Today, ethological theory of attachment, which recognizes the infant’s emotional tie to the caregiver as an evolved response that promotes survival, is the most widely accepted view. John Bowlby (1969), who first applied this perspective to the infant–caregiver bond, was inspired by Konrad Lorenz’s studies of imprinting (see Chapter 1). Bowlby believed that the human infant, like the young of other animal species, is endowed with a set of built-in behaviors that help keep the parent nearby to protect the infant from danger and to provide support for exploring and mastering the environment. Contact with the parent also ensures that the baby will be fed, but Bowlby pointed out that feeding is not the basis for attachment. Rather, attachment can best be understood in an evolutionary context in which survival of the species—through ensuring both safety and competence—is of utmost importance.
According to Bowlby, the infant’s relationship with the parent begins as a set of innate signals that call the adult to the baby’s side. Over time, a true affectionate bond forms, supported by new cognitive and emotional capacities as well as by a history of warm, sensitive care. Attachment develops in four phases:

1. **Preadaptation phase (birth to 6 weeks).** Built-in signals—grasping, smiling, crying, and gazing into the adult’s eyes—help bring newborn babies into close contact with other humans, who comfort them. Newborns prefer their own mother’s smell, voice, and face (see Chapters 3 and 4). But they are not yet attached to her, since they do not mind being left with an unfamiliar adult.

2. **“Attachment-in-the-making” phase (6 weeks to 6–8 months).** Infants respond differently to a familiar caregiver than to a stranger. For example, at 4 months, Timmy smiled, laughed, and babbled more freely when interacting with his mother and quieted more quickly when she picked him up. As infants learn that their own actions affect the caregiver’s behavior, they begin to develop a sense of trust—the expectation that the caregiver will respond when signaled—but they still do not protest when separated from her.

3. **“Clear-cut” attachment phase (6–8 months to 18 months–2 years).** Now attachment to the familiar caregiver is evident. Babies display separation anxiety, becoming upset when their trusted caregiver leaves. Like stranger anxiety (see page 174), separation anxiety does not always occur; it depends on infant temperament and the current situation. But in many cultures, separation anxiety increases between 6 and 15 months. Besides protesting the parent’s departure, older infants and toddlers try hard to maintain her presence. They approach, follow, and climb on her in preference to others. And they use the familiar caregiver as a secure base from which to explore.

4. **Formation of a reciprocal relationship (18 months to 2 years and on).** Rapid growth in representation and language enables toddlers to understand some of the factors that influence the parent’s coming and going and to predict her return. As a result, separation protest declines. Now children use requests and persuasion to alter their goals. For example, at age 2, Caitlin asked Carolyn and David to read her a story before leaving her with a babysitter. The extra time with her parents, along with a better understanding of where they were going (“to have dinner with Uncle Sean”) and when they would be back (“right after you go to sleep”), helped Caitlin withstand her parents’ absence.

According to Bowlby (1980), out of their experiences during these four phases, children construct an enduring affectionate tie to the caregiver that they can use as a secure base in the parents’ absence. This image serves as an internal working model, or set of expectations about the availability of attachment figures and their likelihood of providing support during times of stress. The internal working model becomes a vital part of personality, serving as a guide for all future close relationships (Bretherton & Munholland, 2008).

Consistent with these ideas, as early as the second year, toddlers seem to form attachment-related expectations about parental comfort and support. In several studies, securely attached 12- to 16-month-olds looked longer at a video of an unresponsive caregiver (inconsistent with their expectations) than a video of a responsive caregiver. Insecurely attached agemates, in contrast, either looked longer at the responsive caregiver or did not distinguish between the two (Johnson, Dweck, & Chen, 2007; Johnson et al., 2010). The researchers concluded that the toddlers’ visual responses reflected “surprise” at caregiver behavior at odds with their own internal working model. With age, children continually revise and expand their internal working model as their cognitive, emotional, and social capacities increase and as they interact with parents and form other close bonds with adults, siblings, and friends.
Measuring the Security of Attachment

Although all family-reared babies become attached to a familiar caregiver, the quality of this relationship varies. A widely used laboratory procedure for assessing the quality of attachment between 1 and 2 years of age is the Strange Situation. Designed by Mary Ainsworth, it takes the baby through eight short episodes in which brief separations from and reunions with the parent occur (see Table 6.2).

Observing infants’ responses to these episodes, researchers identified a secure attachment pattern and three patterns of insecurity (Ainsworth et al., 1978; Main & Solomon, 1990; Thompson, 2013). From the description at the beginning of this chapter, which of the following patterns do you think Grace displayed after adjusting to her adoptive family?

- **Secure attachment.** These infants use the parent as a secure base. When separated, they may or may not cry, but if they do, it is because the parent is absent and they prefer her to the stranger. When the parent returns, they convey clear pleasure—some expressing joy from a distance, others asking to be held until settling down to return to play—and crying is reduced immediately. About 60 percent of North American infants in middle-SES families show this pattern. In low-SES families, a smaller proportion of babies are secure, with higher proportions falling into the insecure patterns.

- **Insecure–avoidant attachment.** These infants seem unresponsive to the parent when she is present. When she leaves, they usually are not distressed, and they react to the stranger in much the same way as to the parent. During reunion, they avoid or are slow to greet the parent, and when picked up, they often fail to cling. About 15 percent of North American infants in middle-SES families show this pattern.

- **Insecure–resistant attachment.** Before separation, these infants seek closeness to the parent and often fail to explore. When the parent leaves, they are usually distressed, and on her return they combine clinginess with angry, resistive behavior (struggling when held, hitting and pushing). Many continue to cry after being picked up and cannot be comforted easily. About 10 percent of North American infants in middle-SES families show this pattern.

- **Disorganized/disoriented attachment.** This pattern reflects the greatest insecurity. At reunion, these infants show confused, contradictory behaviors—for example, looking away while the

### Table 6.2
Episodes in the Strange Situation

<table>
<thead>
<tr>
<th>EPISODE</th>
<th>EVENTS</th>
<th>ATTACHMENT BEHAVIOR OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Researcher introduces parent and baby to playroom and then leaves.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Parent is seated while baby plays with toys.</td>
<td>Parent as a secure base</td>
</tr>
<tr>
<td>3</td>
<td>Stranger enters, is seated, and talks to parent.</td>
<td>Reaction to unfamiliar adult</td>
</tr>
<tr>
<td>4</td>
<td>Parent leaves room. Stranger responds to baby and offers comfort if baby is upset.</td>
<td>Separation anxiety</td>
</tr>
<tr>
<td>5</td>
<td>Parent returns, greets baby, and offers comfort if necessary. Stranger leaves room.</td>
<td>Reaction to reunion</td>
</tr>
<tr>
<td>6</td>
<td>Parent leaves room.</td>
<td>Separation anxiety</td>
</tr>
<tr>
<td>7</td>
<td>Stranger enters room and offers comfort.</td>
<td>Ability to be soothed by stranger</td>
</tr>
<tr>
<td>8</td>
<td>Parent returns, greets baby, offers comfort if necessary, and tries to reinterest baby in toys.</td>
<td>Reaction to reunion</td>
</tr>
</tbody>
</table>

*Note: Episode 1 lasts about 30 seconds; each of the remaining episodes lasts about 3 minutes. Separation episodes are cut short if the baby becomes very upset. Reunion episodes are extended if the baby needs more time to calm down and return to play.*

*Source: Ainsworth et al., 1978.*
parent is holding them or approaching the parent with flat, depressed emotion. Most display a dazed facial expression, and a few cry out unexpectedly after having calmed down or display odd, frozen postures. About 15 percent of North American infants in middle-SES families show this pattern.

An alternative method, the Attachment Q-Sort, suitable for children between 1 and 5 years, depends on home observation (Waters et al., 1995). Either the parent or a highly trained observer sorts 90 behaviors—such as “Child greets mother with a big smile when she enters the room,” “If mother moves very far, child follows along,” and “Child uses mother’s facial expressions as a good source of information when something looks risky or threatening”—into nine categories ranging from “highly descriptive” to “not at all descriptive” of the child. Then a score, ranging from high to low in security, is computed.

The Q-Sort responses of expert observers correspond well with babies’ secure-base behavior in the Strange Situation, but parents’ Q-Sorts do not (van IJzendoorn et al., 2004). Parents of insecure children, especially, may have difficulty accurately reporting their child’s attachment behaviors.

**Stability of Attachment**

Research on the stability of attachment patterns between 1 and 2 years of age yields a wide range of findings. A close look at which babies stay the same and which ones change yields a more consistent picture.

Quality of attachment is usually secure and stable for middle-SES babies experiencing favorable life conditions. And infants who move from insecurity to security typically have well-adjusted mothers with positive family and friendship ties (Thompson, 2006, 2013). Perhaps many became parents before they were psychologically ready but, with social support, grew into the role. In contrast, in low-SES families with many daily stresses and little social support, attachment generally moves away from security or changes from one insecure pattern to another (Fish, 2004; Levendosky et al., 2011). And in follow-ups extending from infancy to late adolescence and early adulthood, shifts from security to insecurity were associated with single parenthood, maternal depression, and poor family functioning and parenting quality, including child maltreatment (Booth-LaForce et al., 2014; Weinfield, Stroufe, & Egeland, 2000; Weinfield, Whaley, & Egeland, 2004).

These findings indicate that securely attached babies more often maintain their attachment status than insecure babies. The exception is disorganized/disoriented attachment, an insecure pattern that is either highly stable or consistently predicts later insecurity of another type (Groh et al., 2014; Weinfield, Whaley, & Egeland, 2004). Furthermore, adults with histories of attachment disorganization are at increased risk of having children who display disorganized/disoriented attachment (Raby et al., 2015). As you will soon see, many disorganized/disoriented infants and children experience extremely negative caregiving, which may disrupt emotional self-regulation so severely that confused, ambivalent feelings often persist, impairing child rearing of the next generation.

**Cultural Variations**

Cross-cultural evidence indicates that attachment patterns may have to be interpreted differently in certain cultures. For example, as Figure 6.1 reveals, German infants show considerably more avoidant attachment than American babies do. But German parents value independence and encourage their infants to be nonclingy (Grossmann et al., 1985). In contrast, a study of infants of the Dogon people of Mali, Africa, revealed that none showed avoidant attachment to their mothers (True, Pisani, & Oumar, 2001). Even when grandmothers are
primary caregivers (as they are with firstborn sons), Dogon mothers remain available to their babies, holding them close and nursing them promptly in response to hunger and distress.

Japanese infants, as well, rarely show avoidant attachment (refer again to Figure 6.1). Rather, many are resistantly attached, but this reaction may not represent true insecurity. Japanese mothers rarely leave their babies in others’ care, so the Strange Situation probably induces greater stress in them than in babies who frequently experience maternal separations (Takahashi, 1990). Also, Japanese parents view the attention seeking that is part of resistant attachment as a normal indicator of infants’ efforts to satisfy dependency and security needs (Rothbaum, Morelli, & Rusk, 2011). Despite these and other cultural variations, the secure pattern is still the most common attachment quality in all societies studied (van IJzendoorn & Sagi-Schwartz, 2008).

**Factors That Affect Attachment Security**

Researchers have looked closely at four important influences on attachment security: (1) early availability of a consistent caregiver, (2) quality of caregiving, (3) the baby’s characteristics, and (4) family context, including parents’ internal working models.

**Early Availability of a Consistent Caregiver.** Although adopted children who spent their first year or more in deprived Eastern European orphanages, where they had no opportunity to establish a close tie to a caregiver, are able to bond with their adoptive parents, they nevertheless show greatly elevated rates of attachment insecurity (Lionetti, Pastore, & Barone, 2015; Smyke et al., 2010; van den Dries et al., 2009). They are also at high risk for emotional and social difficulties. Many are indiscriminately friendly to unfamiliar adults; others are sad, anxious, and withdrawn (Bakermans-Kranenburg et al., 2011; O’Connor et al., 2003). These symptoms typically persist and are associated with wide-ranging mental health problems in middle childhood and adolescence, including cognitive impairments, inattention and overactivity, depression, and either social avoidance or aggressive behavior (Kreppner et al., 2010; Rutter et al., 2007, 2010).

Furthermore, as early as 7 months, institutionalized children show reduced ERP brain waves in response to facial expressions of emotion and have trouble discriminating such expressions—outcomes that suggest disrupted formation of neural structures involved in “reading” emotions (Parker et al., 2005). Consistent with these findings, in adopted children with longer institutional stays, the volume of the amygdala (see page 181) is atypically large (Tottenham et al., 2011). The larger the amygdala, the worse adopted children perform on tasks assessing understanding of emotion and the poorer their emotional self-regulation. Overall, the evidence indicates that fully normal emotional development depends on establishing a close tie with a caregiver early in life.

**Quality of Caregiving.** Dozens of studies report that sensitive caregiving—responding promptly, consistently, and appropriately to infants and holding them tenderly and carefully—is moderately related to attachment security in diverse cultures and SES groups (Belsky & Fearon, 2008; van IJzendoorn et al., 2004). Mothers of securely attached babies also frequently refer to their infants’ mental states and motives: “You really like that swing.” “Do you remember Grandma?” This maternal mind-mindedness—tendency to treat the baby as a person with inner thoughts and feelings—seems to promote sensitive caregiving (Meins, 2013; Meins et al., 2012). In contrast, insecurely attached infants tend to have mothers who engage in less physical contact, handle them awkwardly or “routinely,” and are resentful and rejecting, particularly in response to infant distress (Ainsworth et al., 1978; McElwain & Booth-LaForce, 2006; Pederson & Moran, 1996).

Cultures, however, vary greatly in their view of sensitivity toward infants. In Western societies that highly value independence, sensitive caregiving follows the baby’s lead by being contingently responsive to infant signals, “reading” the baby’s mental states, and supporting exploration. In non-Western village communities and Asian cultures, caregiving that keeps the baby physically close, dampens emotional expressiveness, and teaches social appropriateness is deemed sensitive because it advances the child’s connectedness to others and promotes social harmony (Morelli, 2015; Otto & Keller, 2014). Among the Gusii people of Kenya, for example, mothers are quick to quiet their infants and satisfy their physical needs, but they rarely interact playfully with them. Yet most Gusii infants are securely attached (LeVine et al., 1994). This suggests that security depends on attentive
caregiving, not necessarily on contingent interaction. Puerto Rican mothers, who highly value obedience and socially appropriate behavior, often physically direct and limit their babies’ actions—a caregiving style linked to attachment security in Puerto Rican culture (Carlson & Harwood, 2003). Yet in Western cultures, such physical control and restriction of exploration predict insecurity (Whipple, Bernier, & Mageau, 2011).

Compared with securely attached infants, avoidant babies tend to receive overstimulating, intrusive care. Their mothers might, for example, talk energetically to them while they are looking away or falling asleep. By avoiding the mother, these infants appear to be escaping from overwhelming interaction. Resistant infants often experience inconsistent care. Their mothers are unresponsive to infant signals, yet when the baby begins to explore, they interfere, shifting the infant’s attention back to themselves. As a result, the baby is overly dependent as well as angry at the mother’s lack of involvement (Cassidy & Berlin, 1994).

Highly inadequate caregiving is a powerful predictor of disruptions in attachment. Child abuse and neglect (topics we will consider in Chapter 8) are associated with all three forms of attachment insecurity. Among maltreated infants, disorganized/disoriented attachment is especially common (Cyr et al., 2010). Persistently depressed mothers, mothers with very low marital satisfaction, and parents suffering from a traumatic event, such as serious illness or loss of a loved one, also tend to promote the uncertain behaviors of this pattern (Campbell et al., 2004; Madigan et al., 2006). Some of these mothers engage in frightening, contradictory, and unpleasant behaviors, such as looking scared, teasing the baby, holding the baby stiffly at a distance, roughly pulling the baby by the arm, or seeking reassurance from the upset child (Hesse & Main, 2006; Solomon & George, 2011).

**Infant Characteristics.** Because attachment is the result of a relationship between two partners, infant characteristics should affect how easily it is established. Babies whose temperament is emotionally reactive are more likely to develop later insecure attachments (van IJzendoorn et al., 2004; Vaughn, Bost, & van IJzendoorn, 2008).

However, parental mental health and caregiving are involved. Babies with the short 5-HTTLPR gene, which is associated with emotional reactivity, are more likely than infants with a low-risk genotype to exhibit disorganized/disoriented attachment, but only when caregiving is insensitive (Spangler et al., 2009). In other research, mothers’ experience of trauma was associated with attachment disorganization, but only in infants with a chromosome-11 gene having a certain repetition of DNA base pairs, called DRD4 7-repeat, which is linked to impulsive, overactive behavior (van IJzendoorn & Bakermans-Kranenburg, 2006). These babies, who face self-regulation challenges, were more susceptible to the negative impact of maternal adjustment problems.

Interventions that teach parents to interact sensitively with difficult-to-care-for babies enhance both sensitive caregiving and attachment security (van IJzendoorn & Bakermans-Kranenburg, 2015). One program that focused on both maternal sensitivity and effective discipline was particularly successful in reducing irritable distress and disruptive behavior in toddlers with the DRD4 7-repeat (Bakermans-Kranenburg & van IJzendoorn, 2008a, 2008b). These findings suggest that the DRD4 7-repeat—like the short 5-HTTLPR gene—makes children more susceptible to the effects of both negative and positive parenting.
Family Circumstances. Shortly after Timmy’s birth, his parents divorced and his father moved to a distant city. Anxious and distracted, Vanessa placed 2-month-old Timmy in Ginette’s child-care home and began working 50-hour weeks to make ends meet. On days Vanessa stayed late at the office, a babysitter picked Timmy up, gave him dinner, and put him to bed. Once or twice a week, Vanessa retrieved Timmy from child care. As he neared his first birthday, Vanessa noticed that unlike the other children, who reached out, crawled, or ran to their parents, Timmy ignored her.

Timmy’s behavior reflects a repeated finding: Job loss, a failing marriage, financial difficulties, or parental psychological problems (such as anxiety or depression) can undermine attachment indirectly by interfering with parental sensitivity. These stressors can also affect babies’ sense of security directly, by altering the emotional climate of the family (for example, exposing them to angry adult interactions) or by disrupting familiar daily routines (Thompson, 2013). (See the Social Issues box on the following page to find out how child care affects attachment and child adjustment.) By reducing parental stress and improving parent–child communication, social support fosters attachment security (Moss et al., 2005). Ginette’s sensitivity toward Timmy was helpful, as was the parenting advice Vanessa received from Ben, a psychologist. As Timmy turned 2, his relationship with his mother seemed warmer.

Parents’ Internal Working Models. Parents bring to the family context their own history of attachment experiences, from which they construct internal working models that they apply to the bonds they establish with their children. Monica, who recalled her mother as tense and preoccupied, expressed regret that they had not had a closer relationship. Is her image of parenthood likely to affect Grace’s attachment security?

To assess parents’ internal working models, researchers ask them to evaluate childhood memories of attachment experiences (Main & Goldwyn, 1998). Parents who discuss their childhoods with objectivity and balance, regardless of whether their experiences were positive or negative, tend to behave sensitively and have securely attached children. In contrast, parents who dismiss the importance of early relationships or describe them in angry, confused ways usually have insecurely attached children and are less warm, sensitive, and encouraging of learning and mastery (Behrens, Hesse, & Main, 2007; McFarland-Piazza et al., 2012; Shafer et al., 2015).

But we must not assume any direct transfer of parents’ childhood experiences to quality of attachment with their own children. Internal working models are reconstructed memories affected by many factors, including relationship experiences over the life course, personality, and current life satisfaction. Longitudinal research reveals that negative life events can weaken the link between an individual’s own attachment security in infancy and a secure internal working model in adulthood. And insecurely attached babies who become adults with insecure internal working models often have lives that, based on self-reports in adulthood, are filled with family crises (Waters et al., 2000; Weinfield, Sroufe, & Egeland, 2000).

In sum, our early rearing experiences do not destine us to become either sensitive or insensitive parents (Bretherton & Munholland, 2008). Rather, the way we view our childhoods—our ability to come to terms with negative events, to integrate new information into our internal working models, and to look back on our own parents in an understanding, forgiving way—is far more influential in how we rear our children than the actual history of care we received.

Multiple Attachments

Babies develop attachments to a variety of familiar people—not just mothers but also fathers, grandparents, siblings, and professional caregivers. Although Bowlby (1969) believed that infants are predisposed to direct their attachment behaviors to a single special person, especially when they are distressed, his theory allows for these multiple attachments.

Fathers. When anxious or unhappy, most babies prefer to be comforted by their mother. But this preference typically declines over the second year. And when babies are not distressed, they approach, vocalize to, and smile equally often at both parents, who respond similarly to these overtures (Bornstein, 2015; Parke, 2002).
Does Child Care in Infancy Threaten Attachment Security and Later Adjustment?

A re infants who experience daily separations from their employed parents and early placement in child care at risk for attachment insecurity and development problems? Evidence from the National Institute of Child Health and Development (NICHD) Study of Early Child Care—the largest longitudinal investigation of the effects of child care to date, which included more than 1,300 infants and their families—reveals that nonparental care by itself does not affect attachment quality (NICHD Early Child Care Research Network, 2001). Rather, the relationship between child care and emotional well-being depends on both family and child-care experiences.

Family Circumstances

We have seen that family conditions affect children’s attachment security and later adjustment. The NICHD Study showed that parenting quality, based on a combination of maternal sensitivity and HOME scores (see page 159 in Chapter 5), exerts a more powerful impact on children’s adjustment than does exposure to child care (NICHD Early Childhood Research Network, 1997, 1999).

For employed parents, balancing work and caregiving can be stressful. Parents who feel overloaded by work and family pressures may respond less sensitively to their babies, thereby risking the infant’s security.

Quality and Extent of Child Care

Nevertheless, poor-quality child care may contribute to a higher rate of insecure attachment. In the NICHD Study, when babies were exposed to combined home and child-care risk factors—insensitive caregiving at home along with insensitive caregiving in child care, long hours in child care, or more than one child-care arrangement—the rate of attachment insecurity increased. Overall, mother–child interaction was more favorable when children attended higher-quality child care and also spent fewer hours in child care (NICHD Early Child Care Research Network, 1997, 1999).

Furthermore, when these children reached age 3, a history of higher-quality child care predicted better social skills (NICHD Early Child Care Research Network, 2002b). However, at ages 4% to 5, children averaging more than 30 child-care hours per week displayed externalizing problems, especially defiance, disobedience, and aggression (NICHD Early Child Care Research Network, 2003a, 2006).

This does not necessarily mean that child care causes behavior problems. Rather, heavy exposure to substandard care, which is widespread in the United States, may promote these difficulties, especially when combined with family risk factors. A closer look at the NICHD participants during the preschool years revealed that those in both poor-quality home and child-care environments fared worst in problem behaviors, whereas those in both high-quality home and child-child care environments fared best. In between were preschoolers in high-quality child care but poor-quality homes (Watamura et al., 2011). These children benefited from the protective influence of high-quality child care.

Evidence from other industrialized nations confirms that full-time child care need not harm children’s development. For example, amount of time spent in child care in Norway, which offers high-quality, government-subsidized center-based care, is unrelated to children’s behavior problems (Zachrisson et al., 2013). And when family income drops, Norwegian children who don’t attend child care show more behavior problems than children who do attend (Zachrisson & Dearing, 2015).

Conclusions

Taken together, research suggests that some infants may be at risk for attachment insecurity and adjustment problems due to inadequate child care, long hours in such care, and parental role overload. But it is inappropriate to use these findings to justify a reduction in child-care services. When family incomes are limited or mothers who want to work are forced to stay at home, children’s emotional security is not promoted.

Instead, it makes sense to increase the availability of high-quality child care and to provide parents with paid employment leave (see page 94 in Chapter 3) and opportunities for part-time work. In the NICHD study, part-time (as opposed to full-time) employment during the baby’s first year was associated with greater maternal sensitivity and a higher-quality home environment, which yielded more favorable development in early childhood (Brooks-Gunn, Han, & Waldfogel, 2010).
Fathers’ sensitive caregiving predicts attachment security, though somewhat less strongly than mothers’ (Brown, Mangelsdorf, & Neff, 2012; Lucassen et al., 2011). But mothers and fathers in many cultures, including Australia, Canada, Germany, India, Israel, Italy, Japan, and the United States, tend to interact differently with their babies. Mothers devote more time to physical care and expressing affection, fathers to playful interaction (Freeman & Newland, 2010; Pleck, 2012).

Also, mothers and fathers tend to play differently. Mothers more often provide toys, talk to infants, and gently play conventional games like pat-a-cake and peekaboo. In contrast, fathers—especially with their infant sons—tend to engage in highly stimulating physical play with bursts of excitement (Feldman, 2003). As long as fathers are also sensitive, this stimulating, startling play style helps babies regulate emotion in intensely arousing situations, including novel physical environments and play with peers (Cabrera et al., 2007; Hazen et al., 2010). Fathers’ sensitive, challenging play with preschoolers is associated with favorable emotional and social adjustment from early childhood to early adulthood (Bureau et al., 2017; Grossmann et al., 2008). In contrast, paternal insensitivity during play is linked to preschoolers’ attachment insecurity and externalizing problems, even after other factors linked to these outcomes (such as SES and parent-reported stress) have been controlled.

In cultures such as Japan, where long work hours prevent most fathers from sharing in infant caregiving, play may be an especially influential context in which fathers build secure attachments (Shwalb et al., 2004). In many Western nations, however, a strict division of parental roles—mother as caregiver, father as playmate—has changed over the past several decades in response to women’s workforce participation and to cultural valuing of gender equality.

National surveys of thousands of U.S. married couples with children reveal that although their involvement continues to fall far short of mothers’, today’s fathers spend nearly three times as much time caring for children as fathers did in 1965 (see Figure 6.2) (Pew Research Center, 2015e). Paternal availability to children is fairly similar across U.S. SES and ethnic groups, with one exception: Hispanic fathers spend more time engaged with their infants and young children, probably because of the particularly high value that Hispanic cultures place on family involvement (Cabrera, Aldoney, & Tamis-LeMonda, 2014; Hofferth, 2003).

A warm marital bond and supportive coparenting promote both parents’ sensitivity and involvement and children’s attachment security, but they are especially important for fathers (Brown et al., 2010; Sevigny & Loutzenhiser, 2010). And in studies carried out in many societies and ethnic groups, fathers’ affectionate care of young children predicted later cognitive, emotional, and social competence as strongly as did mothers’—and occasionally more strongly (Rohner & Veneziano, 2001; Veneziano, 2003).

**FIGURE 6.2** Average hours per week U.S. mothers and fathers reported devoting to caring for children in 1965 and 2011. In national surveys of thousands of married couples, mothers’ time spent caring for children between birth and age 18 years increased moderately from 1965 to 2011. Though falling far short of mothers’, fathers’ time devoted to children rose nearly threefold. (Based on Pew Research Center, 2015e.)

**Siblings.** Despite declines in family size, nearly 80 percent of U.S. children grow up with at least one sibling (U.S. Census Bureau, 2017). The arrival of a new baby is a challenging experience for most preschoolers, who often display a temporary increase in aggressive behavior and become demanding, clingy, and less affectionate with their parents for a time. Attachment security may also decline, especially for children over age 2 (old enough to feel threatened and displaced) and for those with mothers under stress (Teti et al., 1996; Volling, 2012; Volling et al., 2017).

Yet resentment is only one feature of a rich emotional relationship that soon develops between siblings. Older children also show affection and concern when the infant cries. By the end of the first year, babies usually spend much time with older siblings and are comforted by the presence of a
preschool-age brother or sister during short parental absences. Throughout childhood, children continue to treat older siblings as attachment figures, turning to them for comfort in stressful situations when parents are unavailable (Seibert & Kerns, 2009).

Nevertheless, individual differences in sibling relationships emerge early. Certain temperamental traits—high emotional reactivity or activity level—increase the chances of sibling conflict (Brody, Stoneman, & McCoy, 1994; Dunn, 1994). And maternal warmth toward both children is related to positive sibling interaction and to preschoolers’ support of a distressed younger sibling (Volling, 2001; Volling & Belsky, 1992). In contrast, maternal harshness and lack of involvement are linked to antagonistic sibling relationships (Howe, Aquan-Assee, & Bukowski, 2001). However, older siblings who remain securely attached to their fathers after the baby’s arrival are less likely to experience worsening conflict with their mothers and more likely to forge positive sibling ties later in the first year (Volling et al., 2017). A close father–child bond seems to support children in adjusting to siblinghood.

Finally, a good marriage is correlated with older preschool siblings’ capacity to cope adaptively with jealousy and conflict (Volling, McElwain, & Miller, 2002). Perhaps good communication between parents serves as a model of effective problem solving. It may also foster a generally happy family environment, giving children less reason to feel jealous.

Refer to Applying What We Know above for ways to promote positive relationships between babies and their preschool siblings. Siblings offer a rich social context in which young children learn and practice a wide range of skills, including affectionate caring, conflict resolution, and control of hostile and envious feelings.

**Attachment and Later Development**

According to psychoanalytic and ethological theories, the inner feelings of affection and security that result from a healthy attachment relationship support all aspects of psychological development. Yet contrary evidence exists. In longitudinal research, secure infants generally fared better than insecure infants at later ages, but not always (Fearon et al., 2010; McCartney et al., 2004; Schneider, Atkinson, & Tardif, 2001; Stams, Juffer, & van IJzendoorn, 2002).

What accounts for this inconsistency? Mounting evidence indicates that continuity of caregiving determines whether attachment security is linked to later development (Lamb et al., 1985; Thompson, 2013). When researchers tracked a large sample of children from ages 1 to 3 years, those with histories of secure attachment followed by sensitive parenting scored highest in cognitive,
emotional, and social outcomes. Those with histories of insecure attachment followed by insensitive parenting scored lowest, while those with mixed histories of attachment and maternal sensitivity scored in between (Belsky & Fearon, 2002).

In sum, a secure attachment in infancy launches the parent–child relationship on a positive path. An early warm parent–child tie, sustained over time, promotes many aspects of children’s development: a more confident and complex self-concept, more advanced emotional understanding, greater effortful control, more effective social skills, a stronger sense of moral responsibility, and higher motivation to achieve in school (Drake, Belsky, & Fearon, 2014; Groh et al., 2014; Viddal et al., 2015). But the effects of early attachment security are conditional—dependent on the quality of the baby’s future relationships. Finally, as we will see again in future chapters, attachment is just one of the complex influences on children’s psychological development.

ASK YOURSELF

CONNECT Review research on emotional self-regulation on pages 177–178. How do the caregiving experiences of securely attached infants promote emotional self-regulation?

APPLY What attachment pattern did Timmy display when Vanessa arrived home from work, and what factors probably contributed to it?

REFLECT How would you characterize your internal working model? What factors, in addition to your relationship with your parents, might have influenced it?

Self-Development

Infancy is a rich formative period for the development of both physical and social understanding. In Chapter 5, you learned that infants develop an appreciation of the permanence of objects. And in this chapter, we have seen that over the first year, infants recognize and respond appropriately to others’ emotions and distinguish familiar from unfamiliar people. That both objects and people achieve an independent, stable existence for infants implies that knowledge of the self as a separate, permanent entity is also emerging.

Self-Awareness

After Caitlin’s bath, Carolyn often held her in front of a mirror. As early as the first few months, Caitlin smiled and returned friendly behaviors to her image. At what age did she realize that the baby smiling back was herself?

Beginnings of Self-Awareness. Newborns’ remarkable capacity for intermodal perception (see page 133 in Chapter 4) supports the beginnings of self-awareness (Rochat, 2013). As they feel their own touch, feel and watch their limbs move, and feel and hear themselves cry, babies experience intermodal matches that differentiate their own body from surrounding bodies and objects.

Over the first few months, infants distinguish their own visual image from other stimuli, but their self-awareness is limited. When shown two side-by-side video images of their kicking legs, one from their own perspective (camera behind the baby) and one from an observer’s perspective (camera in front of the baby), 3-month-olds looked longer at the observer’s view (Rochat, 1998). By 4 months, infants look and smile more at video images of others than at video images of themselves, indicating that they treat another person (as opposed to the self) as a social partner (Rochat & Striano, 2002).

This discrimination of one’s own limb and facial movements from those of others in real-time video reflects an implicit awareness that the self is distinct from the surrounding world. Implicit self-awareness is also evident in young infants’ social expectations—for example, in protest or withdrawal when face-to-face interaction with a responsive adult is disrupted (see page 173). These early signs of self-experience serve as the foundation for development of explicit self-awareness—understanding that the self is a unique object in a world of objects.
Explicit Self-Awareness. During the second year, toddlers become consciously aware of the self’s physical features. In several studies, 9- to 28-month-olds were placed in front of a mirror. Then, under the pretext of wiping the baby’s face, each mother rubbed red dye on her child’s nose or forehead. Toddlers older than 18 to 20 months touched or rubbed their noses or foreheads, indicating awareness of their unique appearance (Bard et al., 2006; Lewis & Brooks-Gunn, 1979). Around age 2, self-recognition—identification of the self as a physically unique being—is well under way. Children point to themselves in photos and refer to themselves by name or with a personal pronoun (“I” or “me”) (Lewis & Ramsay, 2004).

Nevertheless, toddlers make scale errors, attempting to do things that their body size makes impossible. For example, they will try to put on dolls’ clothes, sit in a doll-sized chair, or walk through a doorway too narrow for them to pass through (Brownell, Zerwas, & Ramani, 2007; DeLoache et al., 2013). Possibly, toddlers lack an accurate understanding of their own body dimensions. Other evidence suggests that toddlers, in focusing intently on how they can act on objects, often ignore size information (Grzyb et al., 2017). Scale errors decline between ages 2 and 4.

According to many theorists, self-awareness and self-recognition develop as infants and toddlers increasingly realize that their own actions cause objects and people to react in predictable ways (Nadel, Prepin, & Okanda, 2005; Rochat, 2013). For example, batting a mobile and seeing it swing in a pattern different from the infant’s own actions informs the baby about the relation between self and physical world. Smiling and vocalizing at a caregiver who smiles and vocalizes back helps clarify the relation between self and social world. The contrast between these experiences helps young infants sense that they are separate from external reality. Furthermore, 18-month-olds who often establish joint attention with caregivers are advanced in mirror self-recognition (Nichols, Fox, & Mundy, 2005). Joint attention offers toddlers many opportunities to compare their own and others’ reactions to objects and events, which may enhance their awareness of their own physical uniqueness.

Cultural variations exist in early self-development. In one investigation, urban middle-SES German and East Indian toddlers attained mirror self-recognition earlier than toddlers of non-Western farming communities, such as the Nso people of rural Cameroon and rural families of East India (see Figure 6.3) (Kärtner et al., 2012). Urban German and, to a lesser extent, urban East Indian mothers placed considerable emphasis on autonomous child-rearing goals, including promoting personal talents and interests and expressing one’s own preferences, which strongly predicted earlier mirror self-recognition. In contrast, Nso and East Indian rural mothers valued relational child-rearing goals—doing what parents say and sharing with others. In related research, Nso toddlers, though delayed in mirror self-recognition, displayed an earlier capacity to comply with adult requests than did middle-SES urban Greek toddlers, whose mothers encouraged child autonomy (Keller et al., 2004).

Self-Awareness and Early Emotional and Social Development. Recall that self-conscious emotions depend on a strengthening sense of self. Self-awareness also leads to first efforts to understand another’s perspective. Older toddlers draw on their advancing capacity to
distinguish what happens to oneself from what happens to others to express first signs of empathy—the ability to understand another's emotional state and feel with that person, or respond emotionally in a similar way. For example, they communicate concern when others are distressed and may offer what they themselves find comforting—a hug, a reassuring comment, or a favorite doll or blanket (Hoffman, 2000; Moreno, Klute, & Robinson, 2008).

At the same time, toddlers demonstrate clearer awareness of how to upset others. One 18-month-old heard her mother talking to another adult about an older sibling: “Anny is really frightened of spiders” (Dunn, 1989). The innocent-looking toddler ran to the bedroom, returned with a toy spider, and pushed it in front of Anny’s face!

Categorizing the Self

By the end of the second year, language becomes a powerful tool in self-development. Between 18 and 30 months, children develop a categorical self as they classify themselves and others on the basis of age (“baby,” “boy,” or “man”), sex (“boy” or “girl”), physical characteristics (“big,” “strong”), and even goodness versus badness (“I a good girl.” “Tommy mean!”) and competencies (“Did it!” “I can’t”) (Stipek, Gralinski, & Kopp, 1990).

Toddlers use their limited understanding of these social categories to organize their own behavior. As early as 17 months, they select and play in a more involved way with toys that are stereotyped for their own gender—dolls and tea sets for girls, trucks and cars for boys. Their ability to label their own gender predicts a sharp rise in these play preferences over the next few months (Zosuls et al., 2009). Then parents encourage gender-typed behavior by responding more positively when toddlers display it (Hines, 2015). As we will see in Chapter 8, gender typing increases dramatically during early childhood.

Self-Control

Self-awareness also contributes to strengthening of effortful control. To behave in a self-controlled fashion, children must think of themselves as separate, autonomous beings who can direct their own actions. And they must have the representational and memory capacities to recall a caregiver’s directive (“Caitlin, don’t touch that light socket!”) and apply it to their own behavior.

As these capacities emerge between 12 and 18 months, toddlers first become capable of compliance. They show clear awareness of caregivers’ wishes and expectations and can obey simple requests and commands. And as every parent knows, they can also decide to do just the opposite! But for most, assertiveness and opposition occur alongside compliance with an eager, willing spirit, which suggests that the child is beginning to adopt the adult’s directives as his own (Dix et al., 2007; Kochanska, Murray, & Harlan, 2000). Compliance quickly leads to toddlers’ first consciencelike verbalizations—for example, correcting the self by saying “No, can’t” before reaching for a cookie or jumping on the sofa.

Researchers often study the early emergence of self-control by giving children tasks that, like the situations just mentioned, require delay of gratification—waiting for an appropriate time and place to engage in a tempting act. Between ages 1½ and 4, children show an increasing capacity to wait before eating a treat, opening a present, or playing with a toy (Cole, LeDonne, & Tan, 2013; Vaughn, Kopp, & Krakow, 1984). Children who are advanced in development of attention, language, and suppressing negative emotion tend to be better at delaying gratification—findings that help explain why girls are typically more self-controlled than boys (Else-Quest, 2012).

Like effortful control in general, young children’s capacity to delay gratification is influenced by quality of caregiving. Western toddlers and preschoolers
who experience parental warmth and encouragement are more likely to be cooperative and to resist temptation. Recall that such parenting—which models patient, nonimpulsive behavior—is particularly important for emotionally reactive children (see pages 182–183). And Nso children of rural Cameroon are substantially ahead of their Western agemates in ability to delay gratification (Lamm et al., 2017). From an early age, Nso parents expect children to control their own emotions and behavior.

As self-control improves, parents gradually expand the rules they expect toddlers to follow, from safety and respect for property and people to family routines, manners, and simple chores (Gralinski & Kopp, 1993). Still, toddlers' control over their own actions depends on constant parental oversight and reminders. Several prompts (“Remember, we’re going to go in just a minute”) and gentle insistence were usually necessary to get Caitlin to stop playing so that she and her parents could go on an errand. Applying What We Know above summarizes ways to help toddlers develop compliance and self-control.

As the second year of life drew to a close, Carolyn, Monica, and Vanessa were delighted at their children's readiness to learn the rules of social life. As we will see in Chapter 8, advances in cognition and language, along with parental warmth and reasonable demands for maturity, lead preschoolers to make tremendous strides in this area.

**ASK YOURSELF**

**CONNECT** What type of early parenting fosters the development of emotional self-regulation, secure attachment, and self-control? Why, in each instance, is it effective?

**APPLY** Len, a caregiver of 1- and 2-year-olds, wonders whether toddlers recognize themselves. List signs of self-recognition in the second year that Len can observe.

**REFLECT** Do you think that the expression "the terrible twos"—commonly used to characterize toddler behavior—is an apt description? Explain.
Erikson’s Theory of Infant and Toddler Personality (p. 172)

6.1 Identify personality changes that take place during Erikson’s stages of basic trust versus mistrust and autonomy versus shame and doubt.
- Warm, responsive caregiving leads infants to resolve Erikson’s psychological conflict of basic trust versus mistrust on the positive side.
- During toddlerhood, autonomy versus shame and doubt is resolved favorably when parents provide appropriate guidance and reasonable choices.

Emotional Development (p. 173)

6.2 Describe the development of basic emotions over the first year, noting the adaptive function of each.
- In the first half-year, basic emotions gradually become clear, well-organized signals. The social smile appears between 6 and 10 weeks, laughter around 3 to 4 months. Happiness strengthens the parent–child bond and both reflects and supports motor, cognitive, and social competencies.
- Anger and fear, especially in the form of stranger anxiety, increase in the second half-year as infants’ cognitive and motor skills improve. Newly mobile babies use the familiar caregiver as a secure base from which to explore.

6.3 Summarize changes during the first two years in understanding of others’ emotions, expression of self-conscious emotions, and emotional self-regulation.
- As infants’ ability to detect the meaning of emotional expressions improves, social referencing appears at 8 to 10 months. In the middle of the second year, toddlers realize that others’ emotional reactions may differ from their own, and they use social referencing to gather information about others’ intentions and preferences.
- During toddlerhood, self-awareness and adult instruction provide the foundation for self-conscious emotions. Emotional self-regulation emerges as the prefrontal cortex functions more effectively, as caregivers build on infants’ increasing tolerance for stimulation, and as infants’ ability to shift attention improves. When caregivers are emotionally sympathetic but set limits, toddlers display more effective anger-regulation strategies in the preschool years.

Temperament and Development (p. 178)

6.4 Explain the meaning of temperament and how it is measured.
- Children differ greatly in temperament—early-appearing, stable individual differences in reactivity and self-regulation. The pioneering New York Longitudinal Study identified three patterns: the easy child, the difficult child, and the slow-to-warm-up child. Rothbart’s influential model of temperament includes dimensions representing emotion, attention, and action, along with effortful control, the ability to regulate one’s reactivity.
- Temperament is assessed through parental reports, behavior ratings by others familiar with the child, and laboratory observations. Most neurobiological research has focused on distinguishing inhibited, or shy, children from uninhibited, or sociable, children.

6.5 Discuss the roles of heredity and environment in the stability of temperament, including the goodness-of-fit model.
- Temperament has low to moderate stability: It develops with age and can be modified by child-rearing experiences. Long-term prediction from early temperament is best achieved after age 3, when children improve substantially in effortful control.
- Ethnic and gender differences in temperament may have genetic foundations but are promoted by cultural beliefs and practices.
- Temperament affects differential susceptibility to rearing experiences. Children with the short 5-HTTLPR genotype, which heightens risk of self-regulation difficulties, function worse than other children when exposed to inept parenting and benefit most from good parenting. Parents tend to emphasize temperamental differences between siblings.

6.6 Describe the development of attachment during the first two years.
- Ethological theory, the most widely accepted perspective on attachment, recognizes the infant’s emotional tie to the caregiver as an evolved response that promotes survival. In early infancy, built-in signals help bring infants into close contact with other humans.

6.7 Explain how researchers measure attachment security, the factors that affect it, and its implications for later development.
- Around 6 to 8 months, separation anxiety and use of the caregiver as a secure base indicate the existence of a true attachment bond. As representation and language develop, separation protest declines. From early caregiving experiences, children construct an internal working model that guides future close relationships.
- Using the Strange Situation, a laboratory technique for assessing the quality of attachment between 1 and 2 years of age, researchers have identified four attachment patterns: secure, insecure–avoidant, insecure–resistant, and disorganized/disoriented attachment. The Attachment Q-Sort, based on home observations of children between ages 1 and 3, yields a score ranging from low to high in security.
Securely attached babies with favorable life conditions more often maintain their attachment pattern than insecure babies. The disorganized/disoriented pattern shows greater stability than the other patterns. Cultural conditions must be considered in interpreting attachment patterns.

Attachment security is influenced by early availability of a consistent caregiver, quality of caregiving, the fit between the baby's temperament and parenting practices, and family circumstances. Sensitive caregiving is moderately related to secure attachment.

In Western cultures, sensitive caregiving includes responding contingently to infant signals and "reading" the baby's mental states. In non-Western village communities and Asian cultures, sensitive caregiving keeps the baby close and dampens emotional expressiveness.

In the first year, infants begin to build rich emotional relationships with siblings that combine rivalry and resentment with affection and sympathetic concern. Individual differences in quality of sibling relationships are influenced by temperament, parenting, and marital quality.

Continuity of caregiving is the crucial factor determining whether attachment security is linked to later development. If caregiving improves, children can recover from an insecure attachment history.

6.8 Describe infants' capacity for multiple attachments.

Infants develop strong affectionate ties to fathers, who tend to engage in more exciting, physical play with babies than mothers do.

Early in the first year, infants begin to build rich emotional relationships with siblings that combine rivalry and resentment with affection and sympathetic concern. Individual differences in quality of sibling relationships are influenced by temperament, parenting, and marital quality.

Self-awareness leads to toddlers' first efforts to appreciate another's perspective, including early signs of empathy. As language strengthens, children develop a categorical self, classifying themselves and others on the basis of social categories.

Self-awareness also contributes to self-control. Compliance emerges between 12 and 18 months, followed by delay of gratification, which strengthens between 1½ and 4 years. Children who experience parental warmth and gentle encouragement are likely to be advanced in self-control.

Self-Development (p. 194)

6.9 Describe the development of self-awareness in infancy and toddlerhood, along with the emotional and social capacities it supports.

Self-awareness also contributes to self-control. Compliance emerges between 12 and 18 months, followed by delay of gratification, which strengthens between 1½ and 4 years. Children who experience parental warmth and gentle encouragement are likely to be advanced in self-control.

Important Terms and Concepts

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