

CHAPTER 6

Infant Social and Emotional Development

Emerging Competence in a Relational Context

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Perhaps no aspect of developmental change is more salient to parents than their young child's social and emotional behavior over the first years of life. The emergence of the first social smile is anticipated eagerly; parents worry about the meaning of their infant's cries. Emotion and socially relevant words dominate parents' early descriptions of their young child's personality: "He's such a happy baby," "He's so shy," or "She just loves people."

The fascination with development in these domains is by no means limited to parents. The study of emotional and social experience of infants and young children has a long and rich tradition in the philosophical and empirical literature (Aristotle, 1941; James, 1884). Although often studied as separate domains, it is clear that within the child social and emotional developments are fundamentally intertwined. For example, as the young child's ability to differentiate emotions unfolds, there is an increasing capacity to rely on the emotional expressions of others to determine how to respond to a certain situation. Consider the glance of a 1-year-old child toward his or her mother when first meeting someone new. This new "use" of the other to navigate a social situation (often considered a social advance) is entirely dependent on the young child's ability to differentiate and respond to another's affective expression (which could be considered an emotional advance).

Changes in each of these domains across the first years of life are dramatic. The newborn infant arrives with limited capacity for self-regulation; emotion expressions are most likely reflective of biologically based signals, evolutionarily designed to engage the other in providing protection and care, and the infant still depends on the other to respond to his or her physical and emotional needs. In just a matter of months, the infant's emotional experience is markedly more complex. The infant can engage others in interaction, express delight in face-to-face games, convey feelings of sadness or anger through differentiated facial expression, and strategically use his or her parents' emotional expressions to determine how to respond to a given situation. This rapid developmental progress is not limited to infancy; the toddler begins to show signs of responding empathically to others, and with increasing self-awareness shows evidence of more complex "self-conscious" emotions such as shame, embarrassment, or guilt. Earlier social interactive experiences are internalized, and the young child uses the day-to-day lived experience of social and emotional interactions to guide responses to current interactions with others.

Across all of these developments, what emerges is a move toward increasing social-emotional competence in the infant. With development, the young child evidences increasing

capacities for emotion regulation and coping, more complex affective expressions and understanding, and more sophisticated interactions with important others in his or her social world. In the context of facilitative environments the young child's trajectory of greater competence is accompanied by increasing feelings of self-efficacy, security, and trust.

Our understanding of infant social–emotional development is informed by both normative developmental processes and development in contexts of risk. A common goal of many infant mental health interventions is to support families and young children in maintaining, returning to, or developing a trajectory of social–emotional competence. Thus, we aim to provide a foundation for other chapters in this volume, with an emphasis on normative processes of social–emotional development and implications for infant mental health.

Theoretical Models for Social and Emotional Development

Several theoretical models explaining developmental process in the social and emotional domains have been suggested. The *maturational model* is perhaps the most basic, and from this perspective, individual development represents an innate unfolding of preset maturational time points (Gesell & Armatruda, 1947). Higher-order capacities are seen as the result of growth of brain and physical body functioning. The developmental progression of emotional expressions, for example, may be seen as reflecting this type of “unfolding timetable.”

Broader integrative models address the individual in context. Bronfenbrenner's (1979) conceptualization of the child's experience in terms of a widening series of contexts that mutually influence one another, the *ecosystem model*, emphasizes both immediate environments (e.g., parent–child interactions) that directly impinge on children's daily lived experience, as well as more distal contexts such as institutions that do not directly interact with the child but influence development indirectly (e.g., child care policies, cultural values). These contexts are likely to shape many of the aspects of infant social and emotional development.

Transactional models consider the dynamic interplay between child and context across time (Sameroff, 1993). This perspective has clear implications for social and emotional develop-

ment. For example, as parents respond to their child's emotional displays, their reactions (e.g., perhaps frustration with a difficult-to-soothe infant) shape the quality of the infant's response to the parent (e.g., more distress as the infant reacts to the parent's frustration). Both partners shape each other's social and emotional experience in a dynamic, ongoing fashion.

Current research in the biological domain has also underscored the complex interactions between biological (genetic) disposition and environmental contexts. A *gene–environment interaction model* emphasizes the ways that individuals' biological propensities interact with environmental characteristics to shape the course of development. For example, parental caregiving can alter the social developmental course of individuals who have genetic vulnerability for shy/inhibited temperamental traits (Fox et al., 2005).

With regard to the social and emotional domains there are several more specific models that are important considerations. *Attachment theory* (Bowlby, 1969/1982) has contributed enormously to current conceptualizations of infant social development, and the formation of attachment relationships is considered the predominant organizing force of infant and young child social development. Early interactions with care providers both promote survival and form the basis for later, more complex representations of the caregiver as available and responsive. Individual differences in attachment security are evident in the ways the young child can use the attachment figure as a secure base, and have implications for social and emotional development in a broadening array of contexts.

Temperament models emphasize individual differences, typically viewing young children as varying in certain characteristics that both shape their experience of the environment and their responses to it. Temperament models often emphasize biologically based individual differences, though current research suggests a more complex interplay with the environmental context (e.g., (Fox et al., 2005; Zhang, Chen, Deng, & Lu, 2014). While some features of temperament are less apparently related to social and emotional development (e.g., activity level), other features are inherently linked (e.g., emotionality and mood).

It is likely that the impact of a child's emotionality on social functioning depends on his or her skills at emotion regulation (Lemerise

& Arsenio, 2000). Most *emotion regulation models* emphasize the young child's abilities to control, modify, and manage aspects of his or her emotional reactivity and expressivity. Individual differences in emotion regulation are often considered to be related to differences in the caregiving context (Calkins & Hill, 2007; Kim, Stifter, Philbrook, & Teti, 2014), though clearly children who vary in temperament also face different tasks in regulating their emotions (Lemerise & Arsenio, 2000; Thompson, 1988). For example, a child with a positive disposition and a high threshold for distress has a very different regulatory challenge than one who is more prone to intense and persistent negative emotions.

Transitions in Social and Emotional Development

The first years of life involve dramatic change across multiple domains of development. Developments in each of these domains, however, are not evenly distributed across time. Despite some apparent underlying continuity and gradual unfolding, there are also periods of rapid change and reorganization, sometimes referred to as biobehavioral "shifts" or "transitions" (Davies, 2010; Emde & Buschsbaum, 1989). Although earlier stages involved the unfolding and emergence of certain capacities, during these periods of reorganization, new capacities become integrated and dominant. We outline here several prominent developmental shifts within the social and emotional domains.

2–3 Months

Most of the newborn infant's behavior is accounted for by endogenous rhythms and internal states. Following the 2- to 3-month shift, and corresponding to rapid neurological changes, much more of the infant's daily life is spent in wakefulness, and the infant is more focused and better organized (Bowlby, 1969/1982). This has clear implications for social interactions and engagement, and the shift is often most readily apparent to parents in terms of their infant's emotional expressions and social responses. By 2 months, most infants have begun to display social smiles, and about 2 weeks later, there is evidence of cooing vocalizations in response to social encounters. These advances typically elicit delight in parents and other caregivers. Parents begin to experience their infant as hav-

ing more responsiveness and more consistent characteristics.

7–9 Months

This period involves a rapid increase in the differential response of the infant to familiar, primary caregivers. The infant clearly discriminates between care provided by the attachment figure and that provided by less familiar others. Thus, this period has been termed the "onset of focused attachment" (Emde & Buschsbaum, 1989). Infants who previously did not protest separation may now cry when the parent leaves the room. Stranger anxiety increases and is prominent. Advances in memory and cognition permit more anticipation or expectation regarding social routines and interactions. For example, whereas the younger child may have laughed upon completion of an interactive game, during this period, infants may laugh in anticipation of the mother's return during the peek-a-boo game (Lieberman, 1993; Saarni, 1999).

Relatedly, this biobehavioral period is associated with increasing complexity in the infant's capacity for intersubjectivity and an emerging capacity for intentional communication with another. *Intersubjectivity* refers to the infant's capacity to engage in mutual sharing of experiences about objects and events with another person, while *intentional communication*, which builds on this intersubjective capacity, reflects the infant's ability to produce and respond to nonverbal, spontaneous, and intentional actions between at least two people relative to, and often in order to direct attention to, a third entity (i.e., an object or person). In addition to pointing, intentional communication can be conveyed through other means such as eye gaze, or head and body turning in the direction of the target. Although the building blocks of intersubjectivity are evident even earlier in development (Meltzoff & Moore, 1998; Stern, 1985), "joint attention," that is, the nonverbal directing of another's attention to a distal target, which is often considered a hallmark of the capacity for intentional communication, emerges following this critical second biobehavioral shift (Tomassello, Malinda, Josep, Tanya, & Henrike, 2005). Research on the developmental psychopathology of autism highlights deficits in social-communication behaviors, including reduced eye gaze, coordination of gaze, and activities that involve joint intentions and attention, as early

indicators of this disorder (Tomasello et al., 2005; Zwaigenbaum et al., 2007), which is often evident in children as young as 9 months of age.

18–21 Months

This period is characterized by the emergence of increasing self-awareness and increases in symbolic representation. Infants display more independence, and social interactions are increasingly facilitated by their emerging symbolic capacity (e.g., language). Social referencing is prominent; the child understands different affective expressions in the parent and uses them to guide responses to novel situations (Feinman, Roberts, Hsieh, Sawyer, & Swanson, 1992). In addition, toddlers increasingly use affective expressions instrumentally, for example, they may seem to smile or pout to “get their way.” Infants remember past events and sequences, and have formed representations based on repeated events, which in turn guide later behavior in new contexts. With increasing awareness of separateness, there are corresponding increases in mood swings, secure base behavior, and sense of vulnerability (Lieberman, 1993; Mahler, Pine, & Bergman, 1994). During this time, the toddler begins to display more self-conscious emotions, those that seem to require some sense of awareness of self and other, including feelings of shame, guilt, embarrassment, and empathy (Lewis, 2000).

Emotional Development

From the first weeks of life, emotional reactions help to organize the infant’s responses to the environment, and function as powerful communicative signals. Emotional processes reflect changes in physiology, cognition, and social functioning, and in turn, impact each of these domains. Parents direct a great deal of activity toward helping the infant to organize emotional reactions—either by amplifying displays of desired emotions or through efforts to divert or redirect unwanted ones.

There are two primary theoretical perspectives employed in the study of human emotion: *structuralist* and *functionalist* approaches. Structuralists focus on the underlying processes that constitute emotion (e.g., what are the physiological components of anger?), as well as the developmental unfolding of emotion experience

(i.e., what emotions can a child experience at a given age?) and are consistent with maturational models (Bridges, 1932; Sroufe, 1996). Consistent with this approach, a great deal of research has focused on developing a comprehensive taxonomy for identifying infant emotional expressions, when they emerge, and how they evolve over the course of early development. For example, Izard (2007) has identified a group of “first-order” emotions that emerge earlier in development, including interest, joy, sadness, anger, and fear. Later in development, more complex emotions, such as jealousy and envy, come online, simultaneous with the increasing cognitive capacities of the young child (Izard, 2011).

Functionalists, in contrast, emphasize the relational aspects of emotions, noting that emotions are elicited in reaction to stimuli that are perceived as personally salient (Campos, Walle, Dahl, & Main, 2011). Functionalists assert that emotions promote *action readiness*, that is, “the attempt by the person to establish, maintain, change, or terminate the relation between the self and the environment on those matters that are important to the person” (Campos et al., 2011, p. 27; also see Izard & Malatesta, 1987). Emotions, from this perspective, are defined in terms of their function—that is, what they do. In this way, emotions may regulate other psychological and behavioral processes. For example, feelings of fear may result in a young toddler running to his or her parent to seek comfort, whereas feelings of comfort may allow him or her to reengage in a play activity.

Although there is controversy about whether certain discrete emotions may be present from earliest infancy as innate, universal, biologically determined phenomena, it is generally agreed that emotional development involves increasingly more complex interactions between emotional, cognitive, physiological, and social-environmental systems (Bell & Wolfe, 2004; Fogel et al., 1992). We therefore begin with a description of research on the unfolding of emotion expression across the first years of life, followed by an examination of the interpersonal contexts of infant emotional development.

Development of Emotion Expression

Newborns are capable of a more limited range of discrete emotional expressions but, with development, display a broader range of emotions and grow more responsive to a wider variety of

eliciting conditions. For example, while general distress is the infant's primary response to inoculation at 2 months, by 19 months, anger is predominant (Izard, Hembree, & Huebner, 1987). Positive emotion expressions (e.g., smiles) typically emerge by age 2–3 months, with laughter often apparent by age 3–4 months. More complex affective blends unfold over the first year of life (Barrett, 2005; Kochanska, Gross, Lin, & Nichols, 2002); for example, a study of 6-month-olds revealed indicators of jealousy, indexed as diminished joy, heightened anger, and increased negative affect when the attention of a preferred caregiver was directed to another (Hart, Carrington, Tronick, & Carroll, 2004).

With the onset of self-awareness in the second year of life, many secondary or "self-conscious" emotions become evident (Lewis, 2013) including embarrassment, shame, guilt, and pride. For example, Barrett, Zahn-Waxler, and Cole (1993), observed two approaches taken by 2-year-olds after they believed they had broken the experimenter's "favorite doll." One group of children tried to fix the situation (the "amenders"), and the other group sought to avoid the experimenter, usually by smiling with their faces averted (the "avoiders"). The researchers suggest the amenders were demonstrating behavior consistent with feelings of guilt, while avoiders were presumably feeling something akin to shame. In a replication of this study, Barrett (2005) found that 17-month-old children demonstrated feelings of guilt, embarrassment, and anxiety after "breaking" the doll.

Many social, cultural, and biological factors are likely to determine the types of reactions an individual child will have to specific emotion-evocative situations. For example, guilt may be more acceptable in many Western cultures (Walbot & Scherer, 1995), whereas shame is often perceived as more aversive and disturbing. Many collectivistic cultures, in contrast, view shame as an emotion that helps to facilitate appropriate social bonds and compliance (Cole, Tamang, & Shrestha, 2006; Kitayama, Marcus, & Matsumoto, 1995).

Infant Sensitivity to Others' Emotional Signals

Emotional expressions are critical social signals; therefore, not surprisingly, infants become attuned and responsive to the emotional signals of others at a very young age. By 2 months, infants are capable of discriminating among distinct human expressions (e.g., Oster, 1981),

including the intensity levels of some expressions. This early capacity for discrimination does not, however, imply "understanding" others' expressions; understanding others' emotions is a process that continues to unfold across the first several years of life. Corresponding to developments in the cognitive domain, the 8- to 9-month-old infant begins to appreciate that others' emotional messages pertain to specific objects or events. *Social referencing* describes the infant's ability to use others' expressions to help shape his or her own responses to the environment. This ability is well established by 12 months of age (Feinman et al., 1992), but it also increases in complexity over time. For example, 18-month-olds appear to engage in "emotional eavesdropping," whereby they use information from interadult emotional expressions in order to determine whether to approach an object (Repaccholi & Meltzoff, 2007).

Beyond the ability to *detect* the emotional expressions of others, infants also develop *expectations* regarding others' affective displays during social engagement. Peek-a-boo games initiated by adult caretakers tap the infant's ability to expect the adult's smiling face following a period of disengagement. Researchers have studied these expectations through the use of procedures designed to interrupt "usual" interactive contingencies. For example, the Still-Face Procedure (Mesman, van IJzendoorn, & Bakermans-Kranenburg, 2009; Tronick, 2003) is a structured, adult–infant interactive task that typically includes (1) a period of face-to-face free play, (2) a period during which the adult holds a still, emotionally unresponsive expression, and (3) a reengagement period, during which the dyad returns to face-to-face play. Between ages 2 and 9 months, infants display heightened negative affect, and corresponding physiological arousal, during the still-face, presumably because they recognize that this disruption in affective exchange is discrepant and undesirable (Mesman et al., 2009).

As emotional detection and expectation abilities develop, the capacity for empathic *responding* also reveals developmental changes in the young child's sensitivity to others' emotional displays. For instance, the process of emotional "contagion" (e.g., when other infants in a day care center start to cry after one starts crying) is generally considered an infantile "preempathic" capacity (Saarni, 1999). Toddlers have been observed to display more advanced empathic responding, reflecting a higher-order cognitive

capacity that permits better perspective taking with others. Expressions of concern (e.g., a worried look; patting; asking, “Baby okay?”), or efforts to generate hypotheses about what has caused another’s distress (asking, “Baby owie?”), suggest an emerging sensitivity to the distress of others. This growing ability for empathy is likely to have a basis in how others have responded to the infant’s own displays of distress. For example, abused toddlers make fewer empathic gestures but are more personally upset or aggressive to distressed peers (Main & George, 1985), while infants whose mothers were more responsive during the first year of life show more empathic concerned attention and fewer personal distress reactions to others at 18 months (Spinrad & Stifter, 2006).

Temperament, Genes, and Emotions in Infancy

Beyond the changes that occur across development, children differ in their emotional “makeup,” and these differences are often described in terms of temperamental variations. For example, highly reactive, irritable babies are frequently described as “difficult,” while infants who are more prone to positive emotions and less reactive are described as “easy-going.” While temperament includes more than emotions, emotionality is considered to be an important component. Later in this chapter, we consider a related domain, emotion regulation, separately.

Consistent with the gene–environment interaction models, temperament has been understood as a biologically based set of behavioral tendencies that influence how an individual will approach, respond to, and interact with the larger social world (Rothbart & Bates, 1998). In defining temperament, some researchers have emphasized a narrow set of dimensions (e.g., activity level, emotionality and socialibility; Buss & Plomin, 1984), while others have argued for a broader array, including proneness to distress and fear, soothability, attention span, persistence, and positive emotionality (Rothbart & Derryberry, 1981; Thomas & Chess, 1977). However, there is general consensus that emotional reactivity is a critical feature of temperament. *Reactivity* refers to the excitability or arousability of the individual’s response system (Rothbart & Derryberry, 1981), such as how quickly the infant expresses distress in response to an unfamiliar stimulus, how intense the distress is, and how long the infant takes to recover.

Over the past several decades, studies have yielded mixed evidence regarding the stability of temperamental features over time. Evidence for modest stability, at least after infancy, includes the seminal longitudinal research of Thomas and Chess (1977), who investigated several temperamental dimensions in infancy and defined groups of “easy,” “difficult,” and “slow-to-warm” children, with the “difficult” group (approximately 10% of infants) showing high levels of negative mood, irregularity in body functions, and slow adaptation to the environment. Subsequent longitudinal research demonstrated that those children who presented with high levels of negative emotional behaviors early in life, indexed as negative affect and aggression, had more behavior problems in middle childhood (age 5 years) and adolescence (ages 14–17). Yet although early childhood negative affect and aggression were significantly intercorrelated ($r = .63$), only those children who displayed aggression at age 3 years were more aggressive in middle childhood, and in turn, had more behavior problems in adolescence (Lerner, Hertzog, Hooker, Hassibi, & Tomas, 1988).

Others have focused on behaviorally inhibited infants, that is, the approximately 15% of infants who exhibit extreme fear and inhibition when exposed to novelty (e.g., Calkins & Fox, 1992; Kagan, Reznick, Clarke, Snidman, & Garcia-Coll, 1984). Studies have indicated modest stability in behavioral inhibition from infancy to middle childhood (Fox, Henderson, Rubin, Calkins, & Schmidt, 2001), and suggest that behavioral inhibition in infancy is a significant predictor of anxiety disorders, particularly social anxiety in later childhood (Chronis-Tuscano et al., 2009; Kagan, Snidman, McManis, & Woodward, 2001; Schwartz, Snidman, & Kagan, 1999). More recent work has focused on potential moderators of this early risk and has identified a child’s ability to successfully recruit cognitive processes involved in the regulation of negative reactivity, such as the infant’s the capacity for attention shifting and/or inhibitory control, as critical (White, McDermott, Degan, Henderson, & Fox, 2011). For example, in a recent study, behavioral inhibition in toddlerhood predicted subsequent anxiety at child age 7 only for those who did not shift attention away from a perceived threat (White et al., 2017).

Although assessment of temperament is often based on behavioral observations, more recent studies reflect advances in biological research.

Individual differences in infant temperament are now generally thought to originate in genetic variations underpinning behavioral, neuroendocrine, and physiological regulatory processes (see review by Propper & Moore, 2006). The human genome comprises approximately 20,000 genes that code essentially all structures of the human body and also regulate functioning across these structures. Variations within any given gene are referred to as “allelic variations” of that gene, and often translate into variations in gene activity level, that is, differences in “gene expression.” Current research explores associations between alleles of a given gene and temperamental vulnerability.

Recently, genes coding for the activity level of two receptors in the brain—the dopamine D4 receptor (*DRD4*) and the serotonin transporter receptor (*5-HTTLPR*)—have been examined as underlying mechanisms for some key temperamental variations, more specifically, individual differences in approach behaviors and inhibition, attention, and novelty seeking (Auerbach, Benjamin, Faroy, Geller, & Ebstein, 2001; Ebstein et al., 1998; Kluger, Siegfried, & Ebstein, 2002).

A meta-analysis summarizing research in 14 studies with more than 3,000 infants on the link between *DRD4* and “reactive temperament” did not confirm a previously identified “main effect” of genetic risk on temperamental vulnerability (Pappa, Mileva-Seitz, Bakermans-Kranenburg, Tiemeier, & van IJzendoorn, 2015), suggesting instead that others factors may moderate the link. For example, research suggests an additive effect of gene–gene interaction of *DRD4* and *5-HTTLPR* allelic risks together as infants with risk alleles in both genes display more negative emotional reactivity than do infants who carry only one risk allele (Auerbach, Faroy, Ebstein, Kahana, & Levine, 2001; Auerbach et al., 1999).

Genetic effects are now widely accepted as being open to moderation by environmental influences, and more current research on gene–environment interactions underscores the critical influence of early social experience on gene functioning. Environmental factors can either ameliorate or potentiate genetically based temperamental risk (Belsky, 2005; Caspi et al., 2003; Fox et al., 2005; Kaufman et al., 2004), and this holds important implications for intervention. For example, children who were *5-HTTLPR* risk carriers and had experienced childhood abuse were more likely to develop

depression later on, but only when their caregivers were themselves under heightened stress (Kaufman et al., 2004) or showed low parenting sensitivity (Zhang et al., 2014). Similarly, insensitive parenting, only when coupled with infant *DRD4* vulnerability, was found to increase a child’s likelihood for greater externalizing problem behaviors in toddlerhood (King et al., 2016; Windhorst et al., 2015) or preschool age (Bakermans-Kranenburg & van IJzendoorn, 2006).

Until recently, most studies investigating gene–environment interactions have focused on specific gene variants within so-called “candidate” genes (e.g., *5-HTTLPR*, *DRD4*), with functions implicated in the outcome of interest (e.g., temperament, problem behaviors). However, subsequent studies have often failed to replicate initial positive results for particular candidate genes (Braithwaite et al., 2013), underscoring the need for larger sample sizes (in the tens of thousands) to increase the validity of such genetic studies, and increasing recognition of the need for collaborative multisite research to develop genetic registries that allow for such sample sizes. Similarly, recent work has focused on examining the interaction effect of whole gene sets within the larger genome in interaction with environment, called genome-wide environmental interaction (GWEI) studies (Windhorst et al., 2016), which also require very large datasets. While cutting-edge, this research is currently only beginning and more work needs to be done to report valid results.

In summary, research on gene–environment interactions is consistent with a transactional perspective and a “goodness-of-fit” model of temperament (Seifer, 2000), which argues that the consequences of temperamental vulnerability are context-dependent and dynamic. Therefore, temperamental “difficulty” does not reside within the individual alone but is significantly shaped or modified by the environmental context. As suggested here, one critical environmental influence that shapes whether temperamental (genetic) vulnerability may impact developmental course involves the parent’s ability to sensitively respond to the child’s emotions as they unfold over the course of development.

Parental Responses to Infant Emotions

The impact of parenting on infant emotional development and expression has been studied

from a number of different perspectives. Multiple aspects of infant emotional behavior, including expressiveness, self and other-directed emotion regulatory behaviors, and soothability, have been linked, for example, to the parents' own emotional availability and expressiveness (e.g., Garner, 1995; Kim et al., 2014), awareness of emotional states (Gergely & Watson, 1996), and parental emotional dysregulation (e.g., depression) (Beeghly & Tronick, 2011; Field, 1994).

From early infancy, parents perceive a wide array of emotions in their young children, and these attributions of emotion can have important implications, as evidenced by research on how parents' own mental health colors the appropriateness of emotions they perceive (Dix, 1991; Leerkes & Crockenberg, 2003). For example, mothers at risk for less secure attachment relationships with their infants make fewer benign, and more hostile, attributions regarding ambiguous infant facial expressions (Rosenblum, Zeanah, McDonough, & Muzik, 2004).

Across parent–infant dyads, parents' emotional exchanges with their infants tend to follow meaningful patterns of interaction. Stern (1985) has written extensively about his observation of mother–infant emotional exchange, noting that the affective interactions have a dynamic “shape” to them, and that patterns of engagement vary across mother–infant dyads. Infant mental health, Stern suggests, is strongly affected by the synchrony of the interaction. More recently, the term “biobehavioral synchrony” was coined (Feldman, 2017; Feldman, Singer, & Zagoory, 2010; Geva & Feldman, 2008) to describe the coupling of coordinated behavior (gaze, touch, vocalization, and affect) with coordinated physiological (autonomous nervous system and stress axis) and brain activation (dopamine and oxytocin-related circuits) responses in mother–infant dyads during social contact. Biobehavioral synchrony is now understood to be a key foundation for the development of human attachment (Feldman, 2017).

Thus, “asynchronous interaction,” observed when one of the partners is not sensitively attuned and responsive to the cues of the other, has been demonstrated to negatively affect infants' early emotional development (Malatesta, Culver, Tesman, & Shepard, 1989; Tronick & Weinberg, 1997) and also may jeopardize infants' biological adaptation to stress (Feldman, 2006). Tronick and Cohn (1989) observed that while the coordination and synchrony of

mother–infant dyads increased from infant age 3 to 9 months, they typically spent more time in “miscoordinated” or “asynchronous” states than in synchronized matching states. These results, consistent with a mutual regulation model, suggest that the *process* of disruption and repair may be a critical part of the developmental process (Beeghly & Tronick, 2011). For example, Rosenblum, McDonough, Muzik, Miller, and Sameroff (2002) observed that some mothers and infants used positive affect (e.g., peek-a-boo games) to “reconnect” following the interactive disruption imposed by the Still-Face Procedure, and this was associated with indicators of more enhanced relationship security. Similarly, the repeated dysregulation of the hypothalamic–pituitary–adrenal (HPA)–cortisol stress system early in development may impair the long-term effectiveness of this neurobiological system, ultimately undermining its capacity to regulate stress responsivity in adult life (Gunnar & Quevedo, 2007; Hibel, Granger, Blair, & Finegood, 2015).

The process of emotional exchange has been proposed to play a central role in the infant's emerging ability to recognize and regulate his or her own emotional states (Lewis & Ramsay, 2005). Gergely and Watson (1996), for example, provide a compelling account of the role of maternal affective mirroring, suggesting that the mother's ability to accurately perceive, mentally transform, then display a “marked” exaggerated response to the infant's emotional displays is related to the infant's own ability to internalize and understand emotional experience. Disturbances may arise when parents display a purely mirrored form of infants' distress, without the accompanying “marking.” For example, parents whose emotion regulation style is characterized by a tendency to overactivate emotional arousal may simply mimic their infants' emotional expression, without processing and transforming the emotion. This “pure mirroring” may escalate the infant's emotional state, having failed to provide the necessary containment and assistance in coping with the experienced emotion.

With development, language plays an increasingly important role in young children's understanding of emotion (Garner, 2003; Meins, Fernyhough, & Wainwright, 2003). Verbal acknowledgment of mental states, which may be considered a form of verbal mirroring, is increasingly used in place of facial mirroring to facilitate the infant's emotion understanding. To illustrate, children whose mothers used more

mental-state language at 15 and 24 months, for example, making reference to child desire (e.g., “You *want* that rattle?”) or emotion (e.g., “That *surprised* you!”), performed better on structured emotion understanding tasks (Taumoepeau & Ruffman, 2006).

Across early development, parents and caretakers are essential in helping infants to express and manage their developing emotions. Through these processes of affective exchange, disruption–repair sequences, and physical and verbal mirroring, infants begin to internalize emotion awareness, understanding, and early emotional self-regulation abilities.

Emotion Regulation

Child emotion regulation is recognized as a core component of social–emotional competence, functional in almost all of the child’s transactions with the world (Calkins & Hill, 2007; National Institute of Child Health and Human Development [NICHD] Early Child Care Research Network, 2004). As children move into the preschool years, they are largely expected to control their emotions in the service of their own, and society’s, goals (Sroufe, Egeland, Carlson, & Collins, 2005), and indicators of emotional dysregulation are often the basis of clinical referral.

Children who are well regulated (both in emotion and behavior) are better able to adapt to contextual and situational changes in the environment in a flexible and spontaneous manner, as well as delay their reactions (e.g., exert control) when appropriate (Eisenberg et al., 2001). From a developmental neuroscience perspective, emotion, cognition, and the developing neural mechanisms of regulation are dynamically linked and work together to help the infant and young child process information and engage in emotion-regulatory action (Bell & Wolfe, 2004), a process that unfolds from infancy into the preschool years and beyond (Kopp, 1989).

Important reviews have addressed the controversial topic of how best to define and measure emotion regulation (see Cole, Martin, & Dennis, 2004). Many of these definitions, however, share a perspective that emotion regulation processes include behaviors, skills, and strategies, conscious or unconscious, effortful or automatic, that modulate, inhibit, or enhance emotional experiences and expressions (Calkins & Hill, 2007).

Although both positive and negative emotions can be regulated and used to achieve goals (e.g., smiling to enhance interactive repair, or anger to eliminate a barrier), child emotion regulation as a dynamic process is often most readily observed in contexts of challenge that afford negative emotions (Cole et al., 2004; Mesman et al., 2009). When confronted with challenging situations, the infant or young child can use a variety of behavioral emotion regulation strategies to cope with heightened arousal, including distress reactions, avoidance, and self-comforting behaviors; the repertoire of available strategies increases over time (Calkins & Hill, 2007; Kopp, 1989). For example, in early infancy, the capacity for gaze aversion and motor control allows the infant to shift attention away from a negative event (e.g., something that is overstimulating) to something more positive (e.g., a toy) and thereby modulate negative affect (Calkins, 2004; Johnson, Posner, & Rothbart, 1991; Kochanska, 2001). Parents can assist in this process through their efforts to divert the infant’s attention (Crockenberg & Leerkes, 2004; Johnson et al., 1991). By the end of the first year, infants are more active in their attempts to modulate distress. They are increasingly able to plan behavior and can act intentionally to signal others to assist them in modulating their affective states. During the second year of life, infants move from more passive to more active methods of emotion regulation, and while caregivers continue to play an important role, toddlers are increasingly able to use specific strategies to manage different affective states.

Challenging events may elicit more or less effective regulation of the distress across infants. For example, Lewis and Ramsay (2005) observed 4- and 6-month-old infants’ anger and sadness reactions to situations that prevented them from achieving a desired goal. Infant displays of sadness were related to greater stress hormone reactions (i.e., cortisol production), while displays of anger were not, suggesting a more adaptive role of anger. Infant anger in response to goal blockage is often associated with attempts to overcome the obstacle (Lemerise & Dodge, 2000). In contrast, sadness may reflect the infants’ perceived lack of control over the situation, or perception of task failure, without corresponding coping to facilitate adaptive physiological regulation (Lewis & Ramsay, 2002, 2005).

The capacity for effective emotion regulation is often considered to have strong social origins,

based in the early interactions between parent and infant (Calkins & Hill, 2007; Cole, Teti, & Zahn-Waxler, 2003; Kopp, 1989; Stern, 1985; Stifter, 2002; Thompson, 1988). For example, less dyadic synchrony between mothers and their 3-month-olds in the Still-Face Procedure is associated with less effective physiological regulation of the challenge task (Mesman et al., 2009). Among 2-year-old children, negative maternal behavior is related to poor physiological regulation, less adaptive emotion regulation, and noncompliant behavior (Calkins, Smith, Gill, & Johnson, 1998). In contrast, maternal positive guidance is associated with 18-month-old toddlers' effective use of distraction and mother-oriented regulating behaviors during a frustration-inducing task (Calkins et al., 1998), and 6-month-olds show less distress when their mothers respond contingently to their efforts at self-soothing (e.g., gaze aversion) (Crockenberg & Leerkes, 2004).

Ultimately, many factors, including the social environment, maturational processes, and temperament, influence emotion regulation capacities during the first years of life. Each child's capacity for effective emotional self-regulation develops within a relational context, and becomes a core element of the child's self-regulation and social-emotional competence.

Emotional Development and Infant Mental Health Implications

Given the vast number of expressive interchanges that occur between parent and infant during the first months of life (Magai, 1999), the influence of parents' emotional engagement with their infant is likely to hold significant consequences for infant emotional development. Thus, from an infant mental health standpoint, it is critical to assess the parent-infant emotional "dance" (Stern, 1985), and to observe both the process of affective synchrony and the process of repair following disruptions (Beeghly & Tronick, 2011; Rosenblum, Dayton, & McDonough, 2006; Tronick, 2006).

The emotional tone of early experience provides a framework within which the infant develops his or her own affective repertoire (Cole, LeDonne, & Tan, 2013). Thus, a parent's reduced capacity, for example, in the case of untreated depression or anxiety, to engage in emotionally positive interaction with the infant may take on an especially important role (Beeghly & Tronick, 2011). While the identifi-

cation and assessment of negative emotionality, or hostile-negative dyadic interactions, is often the focus of infant mental health intervention, the absence of positive affect may be an even more important harbinger of problems in the emotional domain (Rosenblum et al., 2006).

Current research also underscores the importance of recognizing that the challenges of parenting are different for different groups of infants. For example, parents of temperamentally "difficult" infants face greater challenges in soothing their children, and their children appear to be more sensitive to lapses in their caregiving. Leerkes and Crockenberg (2003) suggest that mothers who are successful at calming their temperamentally difficult infants may develop higher degrees of sensitivity than mothers with temperamentally "easy" infants or those who have difficult infants but are unsuccessful at soothing. When parents view their temperamentally challenging infants as soothable, they display higher levels of sensitive caregiving (Ghera, Hane, & Malesa, 2006), which helps parents to recognize these challenges as addressable and likely to have positive impacts.

Taken together, these studies suggest that both parents and infants play an important role in the development of emotion regulation and social-emotional competence. In the following section we focus more fully on the social context within which these emotion regulation capacities develop and emerge.

Social Development

Infants are born into complex social networks, and enter the world with strong propensities for forming social-affective bonds with others. From the first primary attachment relationship to increasingly complex social relations with extended family, peers, and others, the young child is immersed in a world of social relatedness.

Social developmental milestones across the first 3 years are strongly rooted in cognitive and neurological advances, and are embedded in the broader social context. Table 6.1 provides an overview of this developmental process, highlighting central tasks, the context of these advances, and the young child's corresponding social-developmental milestones. The social context of these advances progresses from primarily the parent-infant relationship to include

other significant relationships, including peers, extended family, or child care relationships. The coordination of these advances initially reflects primarily parent-led sequences, but with time incorporate greater infant initiative and back-and-forth interactions. With continued development, these interactive encounters reflect the establishment of goal-corrected partnerships, in which the infant and adult negotiate their exchanges with an awareness of each other as separate, yet interdependent, selves.

While attachment relationships are not the only context for infant social development (Crockenberg & Leerkes, 2000), attachment theory is a predominant model for understanding early infant–parent relationships. In the following section we provide an overview of how parent–infant attachment relationships develop, moving from a discussion of universal processes to a review of individual differences in the quality of attachment relationships. We consider the caregiving context of attachment security, and how early experiences serve as relational templates for later social relationships.

Infant–Parent Attachment Relationships

Attachment theory (Bowlby, 1969/1982) emphasizes the fact that human infants exist for an extended period of time in a state of dependency, wherein proximity to a caretaker is essential for both physical survival and the development of psychological health (e.g., security, emotion regulation) (Simpson, 1999). The primary evolutionary function of this proximity is to promote survival of the dependent infant, but with development, attachment relationships evolve to include more complex functions. The infant is increasingly able to use the attachment figure as a secure base, deriving the security needed to allow for exploration of the environment when safe, and the protection and comfort needed in times of fear or distress (Sroufe & Waters, 1977).

Across diverse cultural contexts, maternal attachments are often primary, although shifting work–family balances within many (especially Western) cultures has resulted in fathers spending increasing amounts of time actively parenting their children (Hofferth, Pleck, Stueve, Bianchi, & Sayer, 2002). Relative to maternal attachments, contemporary theory and research suggests that infant–father attachments emphasize the infant’s ability to explore versus the propensity to seek com-

fort when distressed (Grossmann et al., 2002; Paquette, 2004). Across mothers and fathers, however, attachment relationships serve as a foundation for the early establishment of regulation of affect and arousal. Individual differences in the quality of these early relationships appear to have implications for the young child’s emerging emotion regulation, sense of self-efficacy, and social relatedness outside the parent–child context (Sroufe et al., 2005; Volling et al., 2014).

Individual Differences in Attachment Relationships

Whereas, from an evolutionary perspective, infants are biologically driven to form attachment relationships, individual differences in the quality of these relationships have been the focus of abundant research over the past decades. Ainsworth, Blehar, Waters, and Wall (1978) developed a laboratory-administered procedure, the Strange Situation Procedure (SSP), to assess individual differences in the quality of attachment relationship patterns. Through the induction of stressful challenges, the SSP provides an opportunity to observe the process of interactive repair; challenges include exposure to an unknown environment, interaction with an unknown adult, and two separations from and reunions with the parent. These challenges are intended to activate the infant’s attachment strategy, and the infant’s behavior during this procedure is observed, with special attention paid to the ways the infant uses the parent to regulate his or her emotional states following separation.

Ainsworth described three organized patterns characterizing how infants (and parents) negotiate this attachment-behavior-eliciting task: secure, anxious–avoidant, and anxious–ambivalent attachment patterns (Ainsworth et al., 1978). Ainsworth’s pioneering work validated patterns of attachment based on many hours of home observation during the first year of life.

Infants demonstrating *secure* attachments to their caregivers were able to openly and genuinely display their emotions and use their parents to help regulate their distress. Once comforted, these infants returned to exploratory play. Their balanced and open regulatory strategy was not surprising in light of home observations that suggested these infants had mothers who were generally sensitive and tender in their caretaking interactions. The infants

TABLE 6.1. Social Developmental Tasks, Contexts, and Milestones across the First 3 Years of Life

Developmental task	Social context(s)	Coordinated behaviors	Select milestones	Ages
Regulation	Primarily the parent–infant relationship	Parent assists the infant in regulating sleep, feeding, distress, and arousal	Developing attentiveness to the social world Increasing coordination of parent–infant interactions	0–3 months
Emerging sociability	Primarily the parent–infant relationship	Parent-led system of coordinated engagement with the infant Face-to-face interaction with increasing mutual gaze Parent language and verbalization toward infant	Increased eye-to-eye contact Emergence of social smiles Social vocalizations	2–3 months
Reciprocal exchange	Parent–infant and close family relationships	Back-and-forth exchanges between infant and others	Infant increasingly responsive to social bids	3–6 months
Infant initiative	Parent–infant and close family relationships	Infant initiation of play with others, as well as an increasing ability to direct activities Infant embellishes on others' initiations	Evidence of intentionality and goal direction—the infant shows a preference for certain activities and leads attention Delight in games (e.g., peck-a-boo)	6–9 months
Onset and establishment of focused attachment	Parent–infant relationship	Parent provides secure base Infant relies on parent for comfort and protection during times of distress or perceived threat Infant explores the environment in the presence of caregiver	Stranger anxiety, separation distress Emergence of person permanence (i.e., ability to keep the parent in mind even when he or she is not present) Secure base behavior	7–18 months

Emergence of joint attention	Broader social context, including parents, family, peers, care providers	Infant displays an awareness of others' point of view Infant seeks others' facial expressions in order to understand new situations	Imitative learning Social referencing Expresses affect instrumentally or purposefully	9–12 months
Self-assertion and independent self-concept	Broader social context, including parents, family, peers, care providers	Infant has an awareness of self Infant determines and selects his or her own goals and intentions apart from parents	Mirror self-recognition Use of “no” and temper tantrums Increasing autonomy Egocentric reasoning	18–24 months
Recognition, continuity, and emergence of a goal-corrected partnership	Broader social context, including parents, family, peers, care providers	Child displays an emerging awareness that the caregiver's intentions are separate from his or her own The coordination of sequences increasingly reflects exchanges between two autonomous yet interdependent individuals	Emerging recognition of the permanence and continuity of primary relationships Increasing ability to negotiate and coordinate behavior in terms of the goals of the other Empathic responding	18–36 months
Establishing peer relationships	Siblings, peer relationships	Child engages in meaningful interaction with siblings and peers in play groups, day care environments, and other settings	Increasing interest in other children Moves from solitary to parallel play Rough-and-tumble play with peers Evidence of empathic concern regarding peer distress	18–36 months

Note. Data from Sander (1975); Sparrow, Balla, & Cicchetti (1984); and Stroufe (1989).

appeared to “trust and expect” the parent to provide care and protection, and indeed, these mothers were contingently responsive and attuned to the expressed needs and desires of their infants.

In contrast, infants with an *anxious-avoidant* pattern behaved as if they did not need comfort from their parent at all, although physiological indicators revealed high levels of arousal and distress. Avoidant children played independently and often seemed impervious to the parent’s presence or absence. During home observations, mothers of avoidantly attached infants were rejecting of infant distress; thus, the behavioral strategy shown by anxious-avoidant infants has been understood as an effort on the child’s side to maintain proximity to the parent by deactivating his or her own display of emotional needs (Magai, 1999).

The third pattern, *anxious-ambivalent* attachment, was characterized by a heightened activation strategy. These infants appeared desperate to have contact with their parents but appeared unable to be soothed by the parent once reunited. Thus, these infants were unable to return to exploratory play (Magai, 1999). Mothers of ambivalently attached infants were observed to be fairly inconsistent in their care, and their interactions with their infants often were not contingently based on the infants’ cues. The infants’ heightened emotion activation was therefore understood as an effort on the child’s side to keep the parent responsive and involved.

A fourth attachment pattern, later articulated by Main and Solomon (1986), was labeled *disorganized*. These children, often with histories of maltreatment, abuse, and neglect, seemed to lack a coherent, organized strategy for gaining proximity to their parent when distressed, but instead displayed bizarre or uncoordinated behaviors in response to the stressful paradigm. For example, some of these infants temporarily froze or displayed conflicted approach-avoidance behaviors toward their parent, as if expressing ambivalence and fear in their attempts to gain proximity. Because mothers of disorganized infants have been found to display both frightening and frightened behaviors (e.g., bizarre vocalizations, sudden intrusive physical movements, reacting with fear to infant behaviors) (Lyons-Ruth & Jacobvitz, 1999), the infant experiences an understandable conflict regarding how and whether to seek proximity and care from the attachment figure.

Relation of Early Attachment with Later Social-Emotional Competence

Longitudinal research has followed children from infancy into early adulthood, and confirms that, in general, the quality of early attachment relationships holds consequences for children’s later social and emotional competence, though later life events also moderate the stability of these associations (Grossmann, Grossmann, & Waters, 2005; Sroufe et al., 2005). In general, children who build a secure attachment with their caregiver early in life continue to hold a secure working model of relationships in mind and show the most optimal developmental outcomes in later years.

In contrast, children with avoidant attachment histories appear to expect rejection within the context of relationships, and research indicates reduced interpersonal competence later in life, particularly when coupled with other risk factors. These children are more vulnerable to becoming emotionally insulated, hostile, and antisocial themselves, potentially provoking adults and peers into rejecting them (Weinfield, Sroufe, Egeland, & Carlson, 1999). For example, previously avoidant children are likely to exhibit greater hostility and scapegoating of peers than their secure and ambivalent resistant counterparts (Suess, Grossmann, & Sroufe, 1992).

Children with ambivalent-resistant histories have learned to behave in an overaroused manner in an attempt to garner the emotional warmth that has been offered inconsistently. In early childhood, these children are described as more hesitant in exploring novel situations, immature, and easily frustrated; more likely to be neglected by their peers (in contrast to the rejection that the avoidant children face); more likely to display separation anxiety; more socially isolated and/or hostile; and less empathetic to other children’s displays of distress than their secure counterparts (Horvath & Weinraub, 2005; Kestenbaum, Farber, & Sroufe, 1989; Sroufe, 1983).

The most vulnerable group appears to be infants with disorganized attachment patterns. This pattern evolves in the face of a child’s fear and uncertainty regarding how the parent will react given a history of frightened or frightening responses that might include seductive enmeshment, helplessness, hostility, or abuse (Lyons-Ruth, Yellin, Melnick, & Atwood, 2005). Thus, not surprisingly, the outcomes of these infants are relatively poor; studies have documented a host of problematic outcomes, including more

controlling behavior in early childhood, more hostile/aggressive behavior toward peers, more externalizing and internalizing behavior problems, and developmental lags that include lower academic self-esteem and achievement (for review, see Solomon & George, 2011).

Parental Influences on Infant Social Development

The caregiving context plays a critical role in the development of infant attachment security and early social–emotional competence. We consider here several domains of parental influence on the infant and young child’s social–emotional development, including parenting behavior, verbal engagement with the infant, and the parents’ own attachment representations.

Caregiving Behavior: Behavioral and Verbal Sensitivity

Beginning with Ainsworth’s seminal home studies, maternal caregiving *sensitivity* (e.g., warmth, attunement and acceptance) has been suggested as the primary mechanism underlying infant attachment relationships (Ainsworth et al., 1978). The role of caregiving sensitivity, particularly in response to infant distress (McElwain & Booth-LaForce, 2006), has since been confirmed across multiple studies, although later research has generally not demonstrated effects as strong as Ainsworth’s original work (DeWolff & van IJzendoorn, 1997).

Other factors have also been identified that may shape the development of attachment patterns, for example, child temperament (Mangelsdorf, McHale, Diener, Goldstein, & Lehn, 2000), the broader child care context (Aviezer, Sagi-Schwartz, & Koren-Karie, 2003; Sagi, van IJzendoorn, Aviezer, & Donnell, 1994), or other aspects of caregiving, such as dyadic regulation and emotional availability (Biringen, 2000; Harrist & Waugh, 2002). These and other studies confirm that many aspects of the caregiving context contribute to infant attachment outcomes.

The role that fathers play in the social development of their young children has been given increasing attention (Cabrera, Hofferth, & Chae, 2011; Dayton, Walsh, Oh, & Volling, 2015; Volling et al., 2014). In general, early research failed to find an association between traditional (e.g., mother-derived) assessments of fathers’ sensitivity and infant attachment (Braungart-Rieker, Garwood, Powers, & Wang, 2001; Grossmann et al., 2002; van IJzendoorn & De Wolff, 1997).

However, there is evidence that other paternal behaviors, such as the ability to be emotionally supportive and challenging during play interactions, may have an important role in supporting the infant’s exploration (rather than proximity seeking, as assessed in the SSP), and may therefore be more salient aspects of the father–infant relationship (Grossmann et al., 2002). Coinciding with shifting norms and social policies in a number of countries reflecting greater support for paternal involvement (e.g., increased paternity leave), models specific to understanding the role of fathers and fathering have evolved, including an increasing focus on biological and behavioral processes (e.g., studies related to the “paternal brain”) (Feldman, Sussman, & Zigler, 2004; Swain, Dayton, Kim, Tolman, & Volling, 2014).

In addition to behavioral sensitivity, researchers have explored the importance of parents’ verbal attributions of mental states to their infants, or mind-minded comments (Meins, Fernyhough, & Fradley, 2001; Meins et al., 2003). *Mind-mindedness* refers to a parent’s tendency to treat the infant as an individual with a mind. For example, parents high in mind-mindedness comment on their child’s interests, desires, feelings, and beliefs during interaction (e.g., “You *want* that ball, don’t you?” or “Are you so *sad*?”). A parent low in mind-mindedness tends to view the child more concretely in terms of need states and behaviors, or in terms of the parent’s own perspective (e.g., “You’re just being fussy”). Maternal mind-minded comments during interaction with their 6-month-old infants are correlated with behavioral sensitivity and interactive synchrony (Meins et al., 2001; Muzik & Rosenblum, 2003; Rosenblum, McDonough, Sameroff, & Muzik, 2008) and indeed, some evidence indicates that mothers’ appropriate mind-minded comments may be a stronger predictor of attachment security at 1 year than maternal behavioral sensitivity (Meins et al., 2001). In addition, mind-minded comments in the first year of life have been linked to 4-year-old children’s understanding of other people’s mental states, or “theory of mind” (Meins, Fernyhough, & Johnson, 2006).

Parents’ Internal Working Models of Relationships: The Role of Mental Representations

Attachment theory postulates that throughout early development, daily lived experiences

of interactions with the primary caregiver are stored as memory templates. These *internal working models*, or mental representations, incorporate both the cognitive and affective elements of early caregiving experiences (Crittenden, 1990), and are thought to guide behaviors and expectations within other social relationships, including parents' relationships with their children. In the following section we discuss influences of parental representations, both regarding parents' representations of past relationships with their own parents and current representations of their children, on parenting behavior and infant attachment.

Parents' Representations of Their Own Early Relationship Experiences. Research on adult attachment representations has focused primarily on the individual's current state of mind with respect to his or her early attachment relationships assessed via the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985). The AAI yields four main categories (autonomous, dismissive, enmeshed, and unresolved) that correspond, respectively, to the four infant attachment categories (secure, avoidant, resistant, and disorganized). Primary among the factors differentiating the autonomous (secure) versus non autonomous adult attachment patterns is the ability to psychologically access and coherently articulate affectively charged thoughts and events without the need to minimize (as in the dismissing category) or distort (as in the preoccupied category) the information (Main & Goldwyn, 1984). Thus, regardless of the specific content of the childhood events being recounted (e.g., memories of abuse or neglect vs. love and support in childhood), the critical factor is how openly and coherently the adult can describe these memories in his or her narrative report of past events.

Thus, parents' internal working models of relationships also function as emotion regulators in the relational context (Rosenblum et al., 2006; Zimmermann, 1999), and are likely to influence the degree to which parents can openly and genuinely identify and orient to their children's emotions (Cassidy, 1994). For example, mothers' AAI attachment classifications have been related to the way they conveyed emotions toward their infants while singing to them; dismissive mothers were found to be unable to modify their singing to adjust for infant distress (Milligan, Atkinson, Trehub, Benoit, & Poulton, 2003). Conversely, mothers with autono-

mous AAI classifications have been observed to be more sensitively attuned to a wider range of infant affects than have nonautonomous mothers (Haft & Slade, 1989).

The power of these representations is evident from the high level of intergenerational correspondence between parental (even grandparental) representations and child security. Work by Dozier, Stovall, and Albus (2001) illustrates the power of these effects in the context of a natural experiment, following child placement with a foster parent. After only 3 months of placement, these researchers observed significant correspondence between children's attachment security and the foster parents' AAI classifications, with rates comparable to those of intact mother-child dyads.

Parents' Representations of Their Children. While the AAI research confirms the influence of parents' own childhood representations for their infants' attachment security, these representations are rather distal to the parent-child relationship in the here and now. Attention has also been directed to the more proximal role of parents' representations of their children, of parenting, and of their relationships with their children (Mayseless, 2006), and a number of interviews have been developed to tap into these representations (Aber, Slade, Berger, Bresgi, & Kaplan, 1985; George & Solomon, 1996; Zeanah & Benoit, 1995).

These more proximal representational assessments have been employed in low- and high-risk samples (Benoit, Parker, & Zeanah, 1997; Rosenblum et al., 2002), pre- and postnatally (Benoit et al., 1997; Huth Bocks, Levendosky, Theran, & Bogat, 2004), and in healthy or at-risk pediatric populations (Schechter et al., 2008; Vreeswijk, Maas, & van Bakel, 2012). In general, parents' mental representations of their child and parenting, both pre- and postnatally, are significantly related to their children's attachment security, at rates comparable to the AAI (Benoit et al., 1997; Huth Bocks et al., 2004). In addition, parental representations are linked to how parents engage with their infants (Dayton, Levendosky, Davidson, & Bogat, 2007; Slade, Belsky, Aber, & Phelps, 1999; Vizziello, Antonioli, Cocci, & Invernizzi, 1993; Vreeswijk et al., 2012; Zeanah, Keener, Stewart, & Anders, 1985).

Despite the evidence for links between parents' representations, sensitivity, and infant attachment, results of meta-analyses of these

studies have identified a “transmission gap” (DeWolff & van IJzendoorn, 1997), in that parenting sensitivity explains only 23% of the association between parental and child working models. A number of explanations for this gap have been proposed, including the need to consider other contextual factors and a broader array of caregiving behavior. At a very proximal level, for example, parent positive affect or delight (e.g., Rosenblum et al., 2002), or the quality of verbal mirroring (Meins et al., 2001), may be more important transmitters of relational security than maternal behavioral sensitivity per se.

Nonetheless, current research does suggest that parenting sensitivity is likely to play a critical, albeit less direct role, than previously thought. For example, one study indicated that mothers who were not autonomous on the AAI yet had *secure* infants were more behaviorally sensitive than nonautonomous mothers with *insecure* infants (Atkinson, Goldberg, & Raval, 2005). From an intervention perspective this is particularly intriguing, pointing to our need to know more regarding factors that facilitate sensitive parenting in parents with insecure states of mind.

Mental State Awareness: The Role of Reflective Functioning and Insightfulness

“Reflective functioning” is a clinically meaningful concept that refers to the individual’s ability to appropriately attribute mental states and beliefs to others (Fonagy & Target, 1997). Because this capacity includes the ability to understand the motivational forces that underlie behavior, high reflective functioning helps to make behavior of the infant more meaningful and predictable. Reflective functioning has also been posited to be directly associated with individuals’ ability to tolerate ambivalent or painful affect without the need to minimize, distort, or split off such unwanted emotional experiences. Thus, the parent who has the capacity to engage in reflective functioning is likely to respond to the child’s emotional needs and reactions with openness and acceptance, which in turn fosters in the child a sense that both positive and negative emotions are tolerable and can be integrated.

The capacity for reflective functioning has been coded from parents’ adult attachment narratives and from interviews designed to assess the parents’ representation of the child, and has been related to infant attachment security (Fonagy, Steele, Moran, Steele, & Higgitt, 1991;

Schechter et al., 2005; Slade, Grienenberger, Bernbach, Levy, & Locker, 2005; Stacks et al., 2014). Relatedly, the Insightfulness Assessment (IA; Koren-Karie, Oppenheim, & Dolev, 2002) is a narrative-based interview designed to assess parents’ insight and empathic understanding of their children’s experiences. The IA asks parents to observe video recordings of their young child and respond to a series of questions that tap into insightfulness (e.g., “What do you think your child was thinking or feeling?”). Responses to the IA have also been related to child attachment security, parenting sensitivity, and positive cooperation in families with toddlers (Koren-Karie et al., 2002; Marcu, Oppenheim, & Koren-Karie, 2016).

Parental reflective functioning and insightfulness are evident when parents acknowledge and tolerate complex feelings, acknowledge intergenerational or other contextual influences, display openness and complexity in representations of the child, and search for mental meaning that underlies their own and their child’s behavior. Low reflective functioning is evident when parents very rarely acknowledge feelings or mental states, fail to acknowledge the influence of psychological processes on their own or others behavior, or generate extremely stereotyped, action- versus emotion-oriented explanations for behavior.

Extant research has underscored the importance of parental reflective functioning and insightfulness for children’s development, particularly in the face of early parental or child adversity or hardship. For example, reflective functioning has been observed to be particularly predictive of child attachment when mothers had also experienced significant childhood adversity (Fonagy, Steele, Steele, Higgitt, & Target, 1994), and maternal insightfulness has been shown to play a particularly important role in buffering against the negative effects of violence exposure (Gray, Forbes, Briggs-Gowan, & Carter, 2015).

Social Development and Infant Mental Health Implications

The infant mental health field has long appreciated the centrality of the parent–child relationship, and today the number of manualized relationship-focused intervention models is increasing; evidence for the efficacy of these interventions is accumulating (Berlin, 2005; Cassidy, Woodhouse, Sherman, Stupica, & Lejuez,

2011; Hoffman, Marvin, Cooper, & Powell, 2006; Lieberman, Ghosh-Ippen, & van Horn, 2016; Sameroff, McDonough, & Rosenblum, 2004; Swain et al., 2017; Toth, Rogosch, Manly, & Cicchetti, 2006). What these interventions share is a focus on the assessment and treatment of the infant in a social-relational context.

Studies indicate that attachment outcomes are most improved when services are, among other things, delivered to a clearly defined risk population, and when the focus is on enhancing parenting sensitivity (Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2003). This emphasis on sensitivity is consistent with research that suggests outcomes for children with sensitively responsive parents, even if the parents themselves maintain a number of other risk factors, are better than outcomes for those who evidence less sensitive parenting. For example, in a large and diverse sample, Belsky and Fearon (2002) observed that children with secure attachment histories whose mothers became *insensitive* during toddlerhood had lower psychosocial functioning scores at 3 years compared to children with insecure attachment histories whose mothers were *sensitive later in development*. This suggests that more proximal parenting behaviors are highly predictive of child outcomes and can even overcome early insecure attachment histories.

Interventions to enhance parenting sensitivity can have important positive effects on children's social-emotional outcomes (Bakermans-Kranenburg et al., 2003), particularly for those parents and infants who are most vulnerable. For example, intervention effects may be strongest for those parents with highly temperamentally reactive infants (Klein Velderman, Bakermans-Kranenburg, & Juffer, 2006). Other more comprehensive models of intervention, for example, the Circle of Security (Hoffman et al., 2006; Huber, McMahon, & Sweller, 2015) or Mom Power (Muzik et al., 2015; Rosenblum et al., 2018; Swain et al., 2017), both attachment-focused interventions, have documented treatment efficacy, yet they target not only parents' sensitivity but also their abilities to understand their children's emotional communications, their own mental representations, and their capacity for reflective reasoning about child behavior.

Conclusions

The first years of life are remarkable for the rapid transformations in both the social and

emotional domains. New capacities emerge with regularity, and with the development of newly acquired skills, the infant moves toward greater levels of social-emotional competence. When developmental milestones are met and supported, social-emotional competence is evident in the young child's emerging awareness and understanding of his or her own and others' emotions; capacity for empathic involvement; ability to cope adaptively with aversive emotions and challenging circumstances; open and trusting emotional communication within relationships; ability to rely on others for safety and support; and ability to explore, play, and carry forward a sense of effectance and trust (Saarni, 1999; Sroufe et al., 2005). When developmental milestones for competence in social-emotional domains are not met, or when the developmental trajectory is set awry, later deficits in the social-emotional domains are more likely to unfold. The field of infant mental health has long recognized that social-emotional competence emerges from a dynamic developmental interplay of complex transactions across maturational, environmental, biological, and interpersonal contexts. Assessment and intervention that attend to the infant within this dynamic developmental context are central to returning to or maintaining the young child on this powerful track toward increasing social-emotional competence.

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