

## Brains in Relationship: Using the Neurorelational Framework with Dyads

As noted in Chapter 2, the foundation of the neurorelational framework uses several theories of neuroscience that cover brain function in a global perspective. This framework encompasses two major components: *neuro*, referring to the individual aspect (the brain systems introduced in Chapter 2) and *relational*, referring to the interpersonal aspect of the dyad. In this chapter we consider (1) the socioemotional milestones as a primary way to assess and intervene with dyadic relationships, and (2) three interpersonal modes of behavior that can be used to capture a variety of interpersonal dynamics.

To evaluate the dyad and the quality of the attachment, we use the socioemotional milestones (also referred to as “dyadic” and “interpersonal” milestones in this book) developed by Greenspan and Wieder in the 1980s (Greenspan, 1985, 1992; Greenspan & Lourie, 1981). These were later incorporated into Axis V in the *Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood, Revised* (DC:0–3R) (ZERO TO THREE, 1994, 2005), the system we prefer for triaging and diagnosing children from birth to 5 years old. These milestones include the following:

- Milestone 1—Attention and regulation (birth–3 months)
- Milestone 2—Mutual engagement and attachment (3–6 months)
- Milestone 3—Purposeful, two-way communication (4–10 months)
- Milestone 4—Complex gestures and problem solving (10–18 months)
- Milestone 5—Use of symbols to express thoughts and feelings (18–30 months)

- Milestone 6—Bridges between symbols and emotional themes (30–48 months)\*

These milestones are assessed in the context of unstructured interactions and play between the parent and child and include different types of toys for which uses and preferences shift according to age ranges: (1) sensory toys (e.g., textured ball, furry puppets, a heavy musical toy with balls on spokes), (2) symbolic toys (e.g., toy telephone, large baby doll, toy cars, toy boat, puppets, dollhouse with furniture), and (3) movement toys (e.g., rotating spinning board, scooter board). As each type of play is observed, the impact of the play equipment on the quality of the parent–child interactions is noted. Some children are much more able to modulate themselves and engage the parent when using certain sensory experiences. Other children are either more unresponsive or overreactive to certain sensory experiences and therefore engage the parent less. Still others are able to make better use of symbolic material. The rating of these socio-emotional milestones follows a continuum of capacities outlined by the DC:0–3R, which progresses in the following manner:

- not present at this time;
- barely present, even with support;
- intermittently present, unless special structure or sensorimotor support is available;
- functions immaturely;
- functions at an age-appropriate level but is vulnerable to stress or has a constricted range of affect or both;
- functions at an age-appropriate level even under stress and with a full range of affective states (ZERO TO THREE, 2005, p. 62).†

The behavioral descriptors that accompany each milestone used throughout this chapter come from Greenspan and Wieder’s DIR model (Greenspan & Wieder, 1998) and the Functional Emotional Assessment Scale (FEAS; Greenspan, 1996), as well as from the clinical and research versions of the FEAS (Greenspan, DeGangi, & Wieder, 2001).

In the following sections, we present (1) an overview of each socio-emotional milestone, (2) the milestones in the context of the neurorelational

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\*From material in the *Diagnostic classification system of mental health and developmental disorders of infancy and early childhood, revised (DC:0–3R)*, by ZERO TO THREE, 2005, Washington, DC: ZERO TO THREE. Used with permission of ZERO TO THREE.

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framework, and (3) the dyadic relationship of Joseph and Rachel discussed in relation to each milestone to exemplify the use of these milestones in a clinical context.

## ASSESSING INTERPERSONAL RELATIONSHIPS USING SOCIOEMOTIONAL MILESTONES

Here we describe the socioemotional milestones in a linear, developmental order. As milestones are achieved, they become building blocks for subsequent milestones, so they have the potential to become additive benefits or deficits. Of course, similar to the brain systems, with older children and experienced practitioners, these milestones can also be understood and worked with in nonlinear ways. The parent–child behaviors that are necessary to accomplish these socioemotional milestones are identified for each in accompanying tables.

Because assessing socioemotional milestones is a vital way to identify the degree of health and maturity present in a dyad, experienced infant mental health professionals may simply use these milestones as a stand-alone tool for guiding intervention processes. However, the neurorelational framework provides an additional strategy for identifying and understanding the underlying global brain dynamics that contribute to the success, constriction, or failure of reaching and sustaining these socioemotional milestones. When the milestones are used in the context of the neurorelational framework, they enable clinicians to do the following:

- understand the global causal factors contributing to the breakdown within each partner and, thus, the dyad;
- comprehend the potential contributions of causal factors with increased clarity and precision;
- prioritize where to focus and initiate treatment;
- prioritize the progression of treatment in terms of what might be most valuable for each individual and for the dyad;
- reevaluate other avenues and approaches if progress is not being made in the professional setting;
- increase collaboration and efficiency of a team's service delivery through the use of a common framework.

In the neurorelational framework, the socioemotional milestones are viewed as the product of contributions from all four brain systems, which in turn provide a common language for individual practitioners and team members. Typically, practitioners allocate the evaluation of the socioemotional milestones to mental health clinicians. However, because interpersonal

relationships are central to brain development, they should be the concern of every practitioner who interfaces with infants and young children.

Although these milestones are primarily used for assessing parent–child dyads within the first 4 years of life, they actually describe dynamics that apply to any two individuals in relationship, regardless of age. Thus, these milestones can be used for assessing not only the parent–child dyad but also the parent–parent dyad, the therapist–child dyad, and the therapist–parent dyad. All team members, regardless of discipline, can learn to use them for assessment, intervention, and team discussions. (Additional sources of information regarding the socioemotional milestones are listed later in this chapter.)

## Milestone 1: Attention and Regulation

The first socioemotional milestone has a direct parallel with the first brain system, the regulation system, which provides the foundation for all learning and emotional development. Interpersonal development depends on both parties' ability to maintain a regulated state. The term *regulation* is widely used in many early childhood professional circles. In the neurorelational framework, regulation begins with “arousal” regulation (regulation system) and is expanded on within each brain systems. Our use of the term is adapted from the clinical infant research literature (Als, 1982, 1984, 2002; Als & Gibes, 1986; Barnard, 1999; Brazelton, 1973, 1992; Prechtl, 1977) that evaluates regulation in terms of the individual's capacity to sustain optimal health across the 24-hour sleep–awake continuum. This capacity includes (1) an ability to shift into a deep sleep state during the sleep cycle, and (2) an ability to maintain a calm and attentive state (i.e., feeling “just right,” the alert processing state) during the awake cycle.

The ability to maintain one's own optimal state of arousal is referred to as “self-regulation.” Vulnerable individuals and children (e.g., premature babies, those exposed to toxins, malnutrition, or illness; older adults; mentally or physically ill individuals of all ages) will need more assistance during the sleep and awake cycles from an emotionally connected adult; this assisted process is referred to as “mutual or interactive regulation.” Over time, with healthy interactive regulation, a child develops reliable self-regulating abilities.

Our “first language” (NCAST-AVENUW, 2003) of nonverbal communication lasts a lifetime and is universal to all ages across all cultures. Healthy interactive regulation depends on parents' ability to “read” the infant's first language of nonverbal cues. When the reading of cues is successful, the regulation process is stable; when it is not, states of dysregulation may become

typical. Parents’ abilities to self-regulate their own states of arousal are crucial for healthy infant development. If the adult (or adults) is dysregulated, the first task is to help him or her enhance the self-ability to maintain healthy state regulation across the sleep–awake cycle. The practitioner’s ability to assess all domains of development depends on being able to read both the infant’s and parents’ nonverbal cues.

***Behavioral Markers for Milestone 1***

The behavioral markers for attention and regulation (Greenspan, 1996; Greenspan, DeGangi, & Wieder, 2001), listed in Table 3.1, indicate the behaviors needed for the parent and the child to accomplish this first milestone. Although the child’s behavioral markers emerge during the age span noted, they generally apply to children of any age. When a certain behavior pertains only to infants, the term *infant* is used.

**Table 3.1. Parent–Child Behavioral Markers for Attention and Regulation**

Parent	Child (observable between birth and 3 months)
<i>Positive Contributions to Health (Coordination)</i>	
Parent shows sustained interest in his or her child through visual contact, focusing, and reading the child’s nonverbal cues (e.g., gestures, vocalizations, eye contact), keeping the child involved in interactive play.	Child is calm and attentive for periods of time (for 2 or more minutes), during which he or she shows interest in and focuses on faces and novel toys.
Parent can follow child’s lead in taking needed rest periods (Brazelton, 1973, 1992).	Child can modulate arousal and sustain the alert processing state by taking needed rest periods (Brazelton, 1973, 1992).
Parent interacts calmly with his or her child, able to wait for the child’s responses, while showing pleasant and happy affect during playtime.	Child remains calm for periods of time, enjoying touch and movement with the parent, while showing happy, content affect.
Parent is sensitive and responsive to child’s need for touch and movement experiences and encourages exploration of the surrounding world.	Child is responsive to parental sensory input through touch and movement, which sustains his or her regulation.
Parent is well modulated in pace and activity level, focusing on child’s interest in emotional engagement and object (or objects) of desire.	Child is well modulated in pace and activity level, focusing on a toy or parent for long periods before changing interests.

(Continued)

**Table 3.1. Continued**

Parent	Child (observable between birth and 3 months)
Parent facilitates arousal recovery through sensory means at the appropriate level and type of stimulation that soothes infant.	Recovers from distress within 20 minutes with sensory help from parent.
<i>Potential Negative Contributions to Dysregulation (Risk Factors for Load Conditions)</i>	
Parent is sluggish or slow-paced but eventually follows child's lead or facilitates engagement.	Child is sluggish or slow-paced but can eventually reach optimal arousal and engagement.
Parent shows flat, somber, or depressed affect.	Child appears sluggish or withdrawn and difficult or slow to engage (underreactive).
Parent becomes more interested in the toys than in the child, ignoring the child.	Child is overly visual, stuck on looking at the toys and not playing with them.
Parent is distracted into other bursts of activity and then returns to playing with child for short periods of time.	Child appears overaroused by toys, environment, or both (overreactive), showing the following behavior: child is moderately active, with occasional burst of changing activity activities, then settling into play with one toy for a short period of time.
Parent is easily and frequently distractible, often walking about the room when interacting with child.	Child appears overaroused by toys, environment, or both (overreactive), showing the following behavior: child is very active, moving from one toy to the next, constantly wandering away from parent and initial points of interest.

*Note.* From material in "Assessing the Emotional and Social Functioning of Infants and Young Children," by S. I. Greenspan, 1996, in *New Visions for the Developmental Assessment of Infants and Young Children*, by S. J. Meisels and E. Fenichel (Eds.), Washington, DC: ZERO TO THREE. Adapted with permission of ZERO TO THREE. Also from material in *The Functional Emotional Assessment Scale (FEAS) for Infancy and Early Childhood: Clinical and Research Applications* by S. I. Greenspan, G. A. DeGangi, and S. Wieder, 2001, Bethesda, MD: Interdisciplinary Council on Developmental and Learning Disorders. Adapted with permission of Dr. S. I. Greenspan.

### ***Considering Milestone 1 in the Context of the Neurorelational Framework***

Although this first socioemotional milestone has a strong connection with the regulatory system, the larger reality is that all brain systems reciprocally influence one another from the beginning. Furthermore, by applying the neurorelational framework to the socioemotional milestones, we can see the degree to which all four brain systems contribute to milestone abilities. In the neurorelational framework, the behavioral markers that we use to

identify the child's and adult's experience of safety are an individual's ability to (1) cycle into deep sleep, (2) maintain an alert processing state, and (3) recover from a stress response. The behavioral markers that we use to identify the experience of challenge or threat are the three primary stress responses of hypoalert, hyperalert, and flooded. Note that these stress responses are not necessarily products of the external environment but may arise in response to internal perceptions. In other words, the experience of safety versus threat may ultimately be a subjective experience. For example, a mobile that triggers crying in one infant would constitute a condition of perceived threat; for the infant who smiles and gurgles, in contrast, it is a condition of safety.

The capacity for arousal regulation is intricately affected by sensory system functioning. The sensory world has alerting, calming, and triggering functions. So when considering regulatory and attentional difficulties, the first place to look for intervention targets, typically, is the sensory system (Dunn, 1997; Williamson & Anzalone, 1997). One way to expand the alert processing state is to engage the baby and help him or her experience joy, which in turn lays the foundation for a healthy relevance system. Finally, the motor system (executive) during early months either supports optimal regulation and attention (e.g., good muscle tone, turning eyes and head to novelty, ability to support head) or contributes to the infant's inability to experience "organized" states of arousal. (See CD-ROM Section 3.1 for a summary table listing the contributions of each brain system to this first socioemotional milestone.)

Now let's apply this information about the first milestone of attention and regulation to Joseph and Rachel, whose relationship was described in Chapter 1 and elaborated in Chapter 2. In particular, we consider how clarifying each system's contribution to regulation problems can help us better organize our intervention strategies for this case.

### ***Joseph and Rachel: Attention and Regulation***

Early on, Joseph and Rachel's relationship showed difficulties with this first milestone of attention and regulation. Joseph was underreactive, in a low state of arousal (hypoalert), which, for Rachel, projected an air of indifference. He seemed unresponsive to sensory information when Rachel used her voice, face, and gestures to engage him. Joseph's response to these attempts was either a lack of interest or an active withdrawal from her. From infancy Joseph also underresponded to the pain from the shots he received during visits to the pediatrician's office, so his lack of reactivity was not exclusive to Rachel's sensory input. However, with no one to help her recognize that his lack of response occurred across a variety of sensations, Rachel read these cues as indifference. She was saddened (relevance system) by Joseph's lack of response and felt considerable anxiety about whether to pursue him to coerce a response or to resort to indifference herself.

Rachel's oscillations between intrusive involvement and indifference became a repetitive cycle that lacked flexibility and did not allow for her own recovery into calm, alert states of arousal. As Joseph's oscillations also began shifting from indifference to impulsivity and tantrums (flooded state), his interactions with his mother showed clear signs of risk in this first level of interpersonal functioning. They could not build a solid foundation for vibrant interaction until both of them were able to sustain aligned states of calm. Instead, the sensory exchanges produced from their interactions led to states of distress rather than pleasant, happy experiences.

Where should the practitioner begin? Through the neurorelational framework we know that optimal regulation (through the regulation system) is contingent on the successful processing and the right dose of sensory information (through the sensory system). In turn, this optimal regulation facilitates both the experience of pleasure (through the relevance system) and the ability to pay attention (through the executive system). This knowledge helps narrow down the possibilities of where to start. Joseph's inability to process the sensory information coming from within and outside the relationship contributes to his lack of regulation, lack of joy, and lack of interest in and attention to others. This information could help relieve his mother's sadness as well as give her the courage to begin exploring other possibilities as to the cause of Joseph's difficulties, rather than to perceive them as being only a reflection of her inadequacies. It is possible that with the right practitioner—one who could emotionally support and connect to her early in this process—Rachel might have staved off the eventual downward spiral into an agitated depression.

Understanding the brain systems and how they interact in development and in relationship provides a starting point for the practitioner from which he or she can form a hypothesis and develop a treatment plan. A successful outcome would require a practitioner who knows the socioemotional domain and one who knows the sensory processing domain (or one who knows both domains well) and how these interface with regulation.

## Milestone 2: Mutual Engagement and Attachment

Within this second socioemotional milestone, attachment processes incorporate the child's ability to engage in mutual (i.e., with the parent) experiences of joy. Stable attention and regulation (the first milestone) do not guarantee an experience of engagement and high-quality attachments (second milestone), but they are a necessary prerequisite.

Engagement occurs during the alert processing state and involves the ability to (1) mutually focus attention and eye contact while staying calm,



and (2) experience cycles of joy through the unique sensory–motor flow that is created between each parent and child. Because the exchange of non-verbal sensations is the earliest means of establishing a loving attachment, the emphasis on nonverbal aspects of communication is maintained in this milestone. Falling in love with one’s partner (regardless of age) is a powerful force that can ignite a motivational surge. The young child’s motivation to explore, cooperate, and develop a moral conscience and empathy for others emerges from a healthy, loving attachment. Optimal arousal with playful and positive emotions, or prolonged stress responses with negative affects, create positive or negative associations and expectations within primary relationships. These powerful early experiences also affect how parents, in turn, anticipate the emotional experience to unfold with their infant.

***Behavioral Markers for Milestone 2***

Table 3.2 presents the behavioral markers for mutual engagement and attachment (Greenspan, 1996; Greenspan, DeGangi, & Wieder, 2001).

**Table 3.2. Parent–Child Behavioral Markers for Mutual Engagement and Attachment**

Parent	Child (observable between 3 and 6 months)
<i>Positive Contributions to Health (Coordination)</i>	
Parent shows a relaxed and calm state during interchanges with child.	Child evidences relaxed and calm state and comfort while near parent, showing connection through eye contact.
Parent enjoys warmth of connection but is not overly attentive to child’s every move.	Child initiates physical closeness to parent but is not clingy.
Parent initiates engagement and responds with warmth and affection through facial expressions and eye contact.	Child initiates engagement and responds with warmth and smiles through facial expressions and eye contact.
Within cultural variations, parent shows warmth and playful back-and-forth engagement through smiles, joyful looks, inviting gestures, playful movements, and vocalizations.	Child participates in back-and-forth engagement with parent through smiles, vocalizations, joyful looks, and gestures.
Parent maintains attention toward child with a verbal or visual connection, signaling an availability, openness, and interest in the child.	Child can focus or pay attention for 30 seconds or more.

(Continued)

**Table 3.2. Continued**

Parent	Child (observable between 3 and 6 months)
Parent allows child to move away and explore while staying connected to child through engaging eye contact, pleasant vocalizations, inviting gestures, and warm facial expressions.	If active and away from parent while exploring or playing with toys, the child visually references the parent across space, using gestures or vocalizations to communicate, while staying calm and relaxed.
Parent anticipates playtime interaction with child with curiosity and excitement.	Child anticipates with curiosity and excitement when parent presents an interesting game or toy.
Parent notices child's distress caused by abrupt distraction or unresponsiveness and facilitates repair of rupture (Tronick, 2007).	Child displays signs of discomfort, displeasure, or sadness during engagement if parent becomes unresponsive or distracted from play.
Parent uses the appropriate level and type of stimulation to assist infant's recovery back to baseline.	Child can recover from distress within 15 minutes with sensory help from parent.
<i>Potential Negative Contributions to Dysregulation (Risk Factors for Load Conditions)</i>	
Parent is overly anxious, overwhelming child with constant touching, talking, or eye contact.	Child is constantly touching, talking (babbling), or maintaining eye contact without modulation.
Parent is overly vigilant and shows discomfort when relating to child (hyperalert state of arousal).	Child keeps head turned toward parent without modulation of activity through rest periods, appearing hypervigilant with intense staring, wide-open eyes, or taut muscle tone (hyperalert state of arousal).
Parent is overly disengaged toward child, with delayed responses or an indifference in vocal tone, eye contact, and gestures that lack a display of vitality (hypoalert state of arousal).	Child turns head away, averts gaze, moves away, or turns away from parent without visual cuing, back and forth, with parent; appears uninterested, avoidant, detached, or withdrawn from parent (hypoalert state of arousal).
Parent is overly angry toward child, talks intrusively to child, and makes hostile eye contact and gestures.	Child is in prolonged state of distress (flooded), crying for periods greater than 15 minutes without accepting comfort from the parent.

*Note.* From material in "Assessing the Emotional and Social Functioning of Infants and Young Children," by S. I. Greenspan, 1996, in *New Visions for the Developmental Assessment of Infants and Young Children*, by S. J. Meisels and E. Fenichel (Eds.), Washington, DC: ZERO TO THREE. Adapted with permission of ZERO TO THREE. Also from material in *The Functional Emotional Assessment Scale (FEAS) for Infancy and Early Childhood: Clinical and Research Applications* by S. I. Greenspan, G. A. DeGangi, and S. Wieder, 2001, Bethesda, MD: Interdisciplinary Council on Developmental and Learning Disorders. Adapted with permission of Dr. S. I. Greenspan.

### ***Considering Milestone 2 in the Context of the Neurorelational Framework***

The neurorelational framework emphasizes attachment as facilitated by basic conditions of safety, which are defined by the individual infant's state of being—that is, as being able to maintain an alert processing state while awake, recover back to the alert processing state following a stress response, and cycle into deep sleep during the sleep phases. Second, we define behavioral breakdowns that disrupt attachment in terms of stress responses, which are seen as occurring adaptively as well as under conditions of challenge or threat. Third, the exchanges that take place between child and parent are seen as an ongoing feedback loop of sensory–motor transformations that act as the building blocks of either safety or stress responses. Motor expressions from one partner—from the eyes, facial muscles, throat, gestures, and body movements—become sensory information for the other partner. The parent's animated, smiling face (motor expressions) constitutes sensory information that (typically) contributes to the positive valence of the attachment.

During achievement of this second socioemotional milestone, we see again the strong connection between nonverbal sensory–motor experiences and the formation of an intimate relationship. The sensory system is pivotal in its connections to all other brain systems by enhancing the child's ability for optimal regulation and recovery (regulation), providing the means through which engagement occurs (relevance), and facilitating sustained attention (executive). The importance of sensory preferences providing the “bath” in which attachment takes place cannot be underestimated (Perry, 1998). As the dyad builds on the foundation of stable regulation—and assuming (1) that an infant has the ability to tolerate sensations from the parent, and (2) that the parent has the ability to tolerate them from the infant—warm exchanges occur between child and parent when physically close as well as apart.

For the child and parent to experience and tolerate the intense sensory flow of the falling-in-love exchange, they will each need a capacity for modulation. Modulation is the ability to traverse the peaks and valleys of sensory-emotional intensity and stay within the optimal state of arousal while doing so. In operational terms, modulation involves taking a break from sensory stimulation with brief rest periods. These rest periods are not the same as prolonged gaze aversion. If there is too much stimulation and an infant lacks a natural capacity to take a break (e.g., through momentary gaze aversion or turning away), he or she may get stuck in overstimulation. At some point, this overstimulation will interrupt the back-and-forth exchange of emotional closeness by generating a shift in the infant's state of arousal

(regulation system). With continued overstimulation, the infant likely will begin to cry in distress (a flooded state of arousal) or tune out (a hypoalert state of arousal). In both cases, the infant stops responding to playful, nonverbal sensory exchanges, and the pleasant or joyful interchange is interrupted. The challenge for the parent is to notice these shifts and to respond by trying a variety of possibilities: lowering the intensity of stimulation, slowing down the rhythm and taking a break, initiating a different type of sensory stimulation, or removing an offending stimulation in an effort to provide comfort that will calm the infant's distress and bring him or her back from tuning out. Through thoughtful experimentation, parents are involved in a learning process—similar to what a professional would do—of finding the sensory preferences and triggers of his or her unique child.

This description of the engagement process notes how the presence of certain sensations, or lack of other sensations, is crucial to stress recovery. Each one of the three primary stress responses, when accompanied by poor stress recovery back to a calm state of arousal, can become habitual. Anything that is repeated with regularity influences implicit emotional memories (relevance system). The emotional memories that are generated through these three stress responses eventually become linked with patterns of sensations and arousal. These connections form interpersonal styles that can be either adaptive—signifying allostasis (coordination)—or maladaptive—signifying potential allostatic load conditions.

If the infant shows frequent and very quick responses to stress, prolonged stress responses with or without recovery, or the absence of a stress response when one would expect it (e.g., crying in response to a doctor's shot), these become potential contributions to load conditions, signifying the need for intervention (Wurmser, Papoušek, & von Hofacker, 2008). These underlying states of arousal, then, provide important information as to the origins of many diagnostic categories. The age between 3 and 6 months (the time period of this milestone) marks a necessary point of intervention if frequent or prolonged signs of distress or lack of engagement are apparent. The diagnostic categories from the DC:0–3R, that can be considered at this age range include posttraumatic stress disorders, bereavement disorder, regulation disorder of sensory processing, and depression. Some of these diagnostic categories are weighted toward one or two brain systems: (1) regulation disorders are weighted toward the regulation *and* sensory systems in that there may be a vulnerable arousal system in tandem with sensory over- or underreactivity affecting the ability for arousal regulation; (2) bereavement disorders, depression, or both are weighted toward the relevance system (affect); and (3) posttraumatic stress disorders are weighted toward the sensory *and* relevance systems, with emotional memories triggered through one or more sensory experiences

stimulating one or more stress responses. At this point, it is also important to understand that inadequate stress recovery is an indicator of some problem within the physiology of the child, the parent, or both. When any of the foregoing circumstances is the case, early intervention is warranted.

At this juncture, the question becomes, is the attachment pattern between the parent and child gaining in momentum toward (1) experiences of warmth, comfort, and joy, signifying safety and regulation, and (2) intentional stress recovery, when one or both members of the pair are experiencing any of the three possible stress responses? Or is the attachment pattern moving toward quicker escalations into the stress responses, signifying more persistent conditions of challenge or threat, accompanied by prolonged periods of dysregulation and poor stress recovery? (see CD-ROM Section 3.2 for a summary table listing the contributions of each brain system to this second socioemotional milestone.)

### ***Joseph and Rachel: Mutual Engagement and Attachment***

Joseph and Rachel's foundation for mutual engagement and attachment was not well established. Having determined earlier that the sensory system plays an important role in engagement and attachment, we can quickly identify the unique sensory needs of each partner and see why and how the first and second socioemotional milestones were intensely constricted right from the start. The mismatch was a recipe for limitations in the first two dyadic milestones. When Joseph's attention was later engaged, it was oriented toward mechanical objects and predictable routines, further alienating Rachel in her attempts at emotional connection. In turn, Rachel's style of communicating was intrusive and overwhelming, both visually and auditorially, to Joseph, even though her behaviors were maternally relevant and typical among mothers. Nevertheless, Rachel unwittingly encouraged Joseph's further avoidance of her because her behavior did not provide him with the kind of sensory information with which he could naturally engage.

It is important to note that infants such as Joseph require a special lens through which to interpret their sensory needs—a lens that is not naturally understood by most parents. Even a highly sensitive and mindful mother could have difficulty understanding how to engage Joseph optimally. This insight expands the common understanding that attachment depends heavily on the parent's ability to read cues. Although that understanding is true in concept, the co-created nature of attachment means that vulnerable infants who are extremely difficult to read require the parent to move beyond the commonly understood ways of relating to infants. This type of reading most often needs professional facilitation. Further-

more, the parent must have the confidence to ask for help, and the professionals responsible must be familiar with the required knowledge.

One way to begin the process of intervention would be to determine Joseph's sensory preferences. Does he respond with calm attention to sensory experiences through any particular type of movement, touch, deep pressure, sights and sounds, or lack of any of these sensations? How can those sensory preferences be used to sustain mutual engagement as long as possible? At which rate, rhythm, and timing does Joseph respond best to the sensory experiences that he does like? All of these questions are answered with the help of a practitioner (or team of practitioners) who can guide the evaluation process through each sensory system while managing Rachel's distress as the story unfolds. Each infant's sensory preferences are unique and cannot be known ahead of time—a fact that can be reassuring to parents in the midst of a crisis brought about by not intuitively knowing how to help their child.

### Milestone 3: Purposeful Two-Way Communication

Building on a stable regulatory system with attentional capacities and a sensory–motor flow of pleasurable exchanges, the parent and child now pursue increasingly versatile interactions with each other. The interaction between two people can be referred to as an interpersonal dance; supported in a calm, regulated state, a back-and-forth rhythm can be noted between any two individuals. When the dance goes well, it flows synchronously without interruption. When the dance is awkward, the partners may step on each other's toes or slow down to the point at which the interaction stops. Stepping on each other's toes in a dyadic relationship translates into constant interruptions or intrusions. Not having enough movement within the dance is equivalent to partners not responding to one another, repeatedly giving one-word answers, never keeping the conversation going.

The third socioemotional milestone emphasizes not only the quality and rhythm of the dyadic dance in its back-and-forth movement but also the intentionality involved in how each partner signals for a playful interaction. This signaling builds on previous experiences and is captured by Greenspan and Wieder's (1998) phrase "circles of communication." This term is meant to convey the back-and-forth volleying of a good conversation, whether nonverbal or verbal. Someone starts, the other person responds, and the first person responds in turn. The full circle of communication involves more than only a two-part series, a start with a response; it requires the third piece, the second response, to complete the communication circle (Greenspan & Wieder, 1998). When one person initiates a

conversation but gets only one-word answers in return, the conversation soon grinds to a halt. The circles of communication are a useful tool in observing relationships because the three steps can actually be counted, thus enabling practitioners and dyads to reflect on the flow of information. Early on, the circles of communication between parent and child revolve around falling in love. A coo, a catching of the eye, a smile, a burst of joy, and a back-and-forth rhythm mark the process.

These dynamics are universal concepts that apply not only to parent–child couples who are cooing and babbling with accompanying motherese (a parent’s nonsensical, nonverbal conversation with his or her infant) but also to any two adult conversations. What appears to apply to all ages is the comfort zone of being in a mid-range tempo (Beebe & Lachmann, 2002)—not too fast and not too slow. These factors parallel the optimal state of the regulatory process that feels just right during the alert processing state.

***Behavioral Markers for Milestone 3***

Table 3.3 presents the behavioral markers for purposeful two-way communication (Greenspan 1996; Greenspan, DeGangi, & Wieder, 2001).

**Table 3.3. Parent–Child Behavioral Markers for Purposeful Two-Way Communication**

Parent	Child (observable between 4 and 10 months)
<i>Positive Contributions to Health (Coordination)</i>	
Parent makes space available for child to open circles of communication by allowing child to decide on the play topic, initiate play, and show how he or she wants to pursue the play.	Child opens circles of communication with facial play and engagement (e.g., initiating peek-a-boo).
Parent responds to and builds on child’s intentions, wishes, and actions.	Child opens circles of communication around objects of interest while also engaging parent through nonverbal means (looks, smiles, gestures, vocalizations).
When opening circles of communication and leading the stimulation, parent paces interaction with child, allowing time for child to respond.	Child participates in opening and closing circles of communication with parent.
Parent avoids over- and understimulating child with sounds or gestures.	Child can handle mid-level range of stimuli from sounds and gestures.

(Continued)

**Table 3.3. Continued**

Parent	Child (observable between 4 and 10 months)
Parent allows child the freedom to explore without constrictions, while also providing safety measures and boundaries.	Child initiates purposeful and intentional motor actions (reaching and crawling) toward objects of desire (toy).
Parent may lead in a way that models a new age-appropriate skill or functions just slightly above child's level (zone of proximal development; Vygotsky, 1978).	Child tolerates and responds with engagement to parent-led interactions or activities.
Parent responds contingently to child by staying with the child's interests most of the time.	Child initiates purposeful and intentional play with faces and toys of interest.
Parent communicates (through gestures, facial muscles, sounds, words, body movement) intentional desire to play or responds to child's desire for play.	Child's play shows intentionality through gestures or other nonverbal means that are consistent with object of interest.
Parent is able to play with toys in a variety of ways.	Child shows variability when playing by engaging in two or more types of different behaviors.
Parent stays attentive and focused on interactive play with child.	Child can pay attention to a person or toy for 1 minute or more.
Parent reads child's gestures and words for help and is responsive.	Child uses gestures and vocalizations to solicit help from parent.
Parent can use distractibility and social engagement to help child recover from stress.	Child can recover from a stress response within 10 minutes by engaging in social interactions.
<i>Potential Negative Contributions to Dysregulation (Risk Factors for Load Conditions)</i>	
Parent's play interactions are aimless, impulsive, or disorganized; parent is unable to build on a theme and take the play to a deeper level.	Child initiates play that is aimless, impulsive, or disorganized, not able to build on parental scaffolding.
Parent does not give clear clues (through gestures or facial cues) that he or she is interested in playing.	Child does not initiate organized or clear gestures for play.
Parent has difficulty getting started in play.	Child needs considerable help to get started in play.
Parent initiates stereotyped, scripted, or repetitive forms of play.	Child initiates play that is stereotyped or repetitive.
Parent fails to close circles of communication by not noticing child's response.	Child fails to close circles of communication by not noticing parent's response.

*(Continued)*



**Table 3.3. Continued**

Parent	Child (observable between 4 and 10 months)
Parent partially or consistently intrudes on the child by doing the opposite of what the child indicates as his or her desire.	Child does not close circles of communication; child notices parent's response and yet does something that has nothing to do with what the parent did.
Parent partially or consistently intrudes on the child by changing activities, once a flow occurs between them, to those of less interest to the child.	Child intrudes on play themes by quickly changing interest.

*Note.* From material in "Assessing the Emotional and Social Functioning of Infants and Young Children," by S. I. Greenspan, 1996, in *New Visions for the Developmental Assessment of Infants and Young Children*, by S. J. Meisels and E. Fenichel (Eds.), Washington, DC: ZERO TO THREE. Adapted with permission of ZERO TO THREE. Also from material in *The Functional Emotional Assessment Scale (FEAS) for Infancy and Early Childhood: Clinical and Research Applications* by S. I. Greenspan, G. A. DeGangi, and S. Wieder, 2001, Bethesda, MD: Interdisciplinary Council on Developmental and Learning Disorders. Adapted with permission of Dr. S. I. Greenspan.

### ***Considering Milestone 3 in the Context of the Neurorelational Framework***

As the interpersonal dance between parent and child becomes routine choreography, with surprises that build flexibility, sensations continue to be a salient means of creating a flow of communication. Playing peek-a-boo, where an established routine is combined with surprises, is a good example of the paradox of stability with flexibility. In this optimal state, the ebb and flow of sensations, from heightened to calm, occur in synchronous movement. As long as regulation, the foundation, is stable and a wide variety of sensations is tolerated, more variety and depth emerge in the communication pattern. With stability comes more chance for flexibility and new experiences.

The flow between the dyadic members relies increasingly on previous patterns and the anticipation of another round of pleasure (engaging the relevance and executive systems). One of the key elements during this milestone is the use of sensations that sustain interpersonal joy, thus creating purposeful rounds of dyadic pleasure that now extend to an active engagement with the world at large. The element of pleasure and excitement generated between the parent-child couple fuels the child's exploration.

Movement, a capacity within the executive system, now can be used with more focused intentionality: the child reaches for toys and crawls to where he or she wants to go. As the motor system matures and evidences new abilities, the child begins to plan and sequence as he or she explores what is interesting in the environment (e.g., using the eyes to scan the larger environment) and decides not only how to get there but also whether help is

needed. Circles of communication that rely on gestures and vocalizations (i.e., grunts) to elicit help begin to emerge during this developmental phase.

With a stable foundation of regulation, sensory, and relevance systems, the executive brain system (through motor) kicks in during this phase. Without a stable foundation of regulation and sensory experiences, patterns of stress arousal and emotional dysregulation are more likely to emerge. Less stable regulation and sensory systems more likely lead toward a pattern of overanxiety, withdrawal, aggression, or some combination of these. A child whose arousal and emotional valence are either underactive or overactive is less likely to plan ahead and more likely to act impulsively. Stable functioning of the first two brain systems (regulation and sensory) enables the other two brain systems (relevance and executive) to mature and expand during this milestone. When the first two brain systems are less stable, a cascading effect begins to occur. More energy goes into states of distress or energy conservation, and less energy is available for observing the surrounding world and planning ahead. (See CD-ROM Section 3.3 for a summary table listing the contributions of each brain system to this third socioemotional milestone.)

### ***Joseph and Rachel: Purposeful, Two-Way Communication***

Given that Joseph and Rachel have not successfully assimilated Milestones 1 and 2 (attention and regulation; mutual engagement and attachment), it is not surprising that their pattern of withdrawal and aggression began early, within the first year of Joseph's life. The two have a long history in which the sensations created between them are not pleasurable. What is relevant to Joseph (a toy) does not match what is relevant to Rachel (eyes and faces); consequently, optimal circles of communication have not emerged. Indeed, this dyad's weak foundation supports few circles of communication that contain any pleasure or excitement. In addition, Joseph is not using gestures to communicate (a poorly functioning motor system); he is oriented toward toys he finds interesting, but he does not share them or initiate playful interactions with his mother. When Rachel tries to join him, she plays *next* to him, not *with* him in an interactive manner.

At this point, if intervention were begun, the practitioner team might want to encourage Rachel to build on Joseph's interest in his particular toys with the goal of fostering shared excitement and pleasure. Rachel might play a game that involves bringing objects of interest to Joseph near her own face and eyes and requiring him to reach toward her face for what he wants. In addition, she could be instructed to lower herself to the floor, on her belly, to catch her baby's glance and make eye contact. Both strategies would help Joseph move toward pleasurable engagement (relevance system). When Joseph is frustrated, Rachel could encourage

him to gesture for help, thus guiding him to express his need for something relevant to him while also engaging his mother.

In tracking further details as to what is relevant to Joseph on a sensory level, we find that he is attracted to toys that move or play music. Rachel could engage him by motoring a similar toy alongside his toy and then finding a way to make both motor toys run into each other. Additionally, Rachel and Joseph could exchange musical toys in a back-and-forth rhythm, thereby combining his sensory preferences (sensory system) with his interest in the musical toy box (relevance system).

## Milestone 4: Complex Gestures and Problem Solving

The communication aspects of this milestone are dependent on a well-functioning motor system. At this age, arm and leg movements are more organized, enabling pointing, crawling, and then walking; eyes can scan the environment, looking for interesting objects. The child can crawl or walk to those objects or point and grunt for help in getting them—useful ways to engage others and the larger environment. One of the most important aspects of this socioemotional milestone is the types of purposeful movements an infant makes as he or she matures into toddlerhood. Are intentional babbling, gesturing, crawling, and walking taking place? Does the infant-toddler appear to wander without intent?

Another important developmental accomplishment during this phase is the child's ability to point to an object of interest, look at the object while pointing, vocalize, then look back at the parent to see whether the parent's eyes are also tracking the object, and finally resume gazing at the exciting object (this is called *joint attention*). This complex gestural, vocal, and eye-tracking combination is saying, in essence, "Look! This is important to me, and I want to make sure you are tracking what is important to me, and I'm going to check to make sure you share this moment with me." The absence of this form of communication is considered a red flag possibly indicating disorders of social communication along the autistic spectrum.

Simple problem-solving abilities also emerge during this developmental period. In these instances, the circles of communication, achieved through pointing, vocalizing, and referencing eye contact back to the parent, revolve around the daily life problems that need to be solved. In essence, the nonverbal communication conveys messages such as "I need help to get that toy off the shelf that I cannot reach" or "I'm hungry and I want that piece of fruit up on the counter right now" or "I want to find my favorite blanket to cuddle with." As infants and toddlers continue to solve problems, they eventually discover words; then, using gestures and words, parent and child find ways to jointly work through these dilemmas.

### ***Behavioral Markers for Milestone 4***

Table 3.4 presents the behavioral markers for complex gestures and problem solving (Greenspan, 1996; Greenspan, DeGangi, & Wieder, 2001).

**Table 3.4. Parent–Child Behavioral Markers for Complex Gestures and Problem Solving**

Parent	Child (observable between 10 and 18 months)
<i>Positive Contributions to Health (Coordination)</i>	
Parent exposes child to increasingly more intense levels and diverse types of stimulation.	Child tolerates various types of touch (e.g., cuddling, roughhousing, different fabrics, brushing hair and teeth); is comfortable with bright lights, loud sounds, and movement.
Parent uses nonverbal forms of communication through eyes, facial expressions, sounds or vocalizations, gestures, and body movements to promote six or more circles of communication during an interaction.	Child uses nonverbal forms of communication through eyes, facial expressions, sounds, gestures, and body movements to reciprocate and promote six or more circles of communication during an interaction.
Parent tracks child's nonverbal clues that link with appropriate signals for simple problem solving.	Child communicates (through circles of communication involving eyes, facial expressions, vocalizations, gestures, and body movements) an ability to solve simple problems to get needs met (e.g., getting a particular type of food, obtaining a toy that is out of reach, not being able to find a favorite item).
When playing, parent expands on what child is doing while remaining on the child's topic.	Child responds to parental lead toward expansion of a theme or play by creating a new response or different outcome to a familiar aspect to the story.
Parent expansion includes providing a small challenge or interesting twist to the play that requires of the child a slightly different or new response from previous playtimes.	Child imitates or copies something new that parent has initiated.
Parent shows sustained delight and pleasure in however child wishes to play through six or more circles of communication.	Child shows sustained delight and pleasure through six or more playtimes with parent.
Parent allows child to assert self in play.	Child allows parent to take the lead at times during play.
Parent supports play themes of closeness and dependency, assertiveness	Child shows a range of emotional themes during play with parent that span closeness

(Continued)

**Table 3.4. Continued**

Parent	Child (observable between 10 and 18 months)
and curiosity, aggression, autonomy, or pleasure and excitement by admiring, showing interest, and joining in the child's play or exploration.	and dependency, assertiveness and curiosity, aggression, autonomy, or pleasure and excitement.
Parent sets appropriate limits or redirects the child.	Child responds with cooperation or short protests with recovery to parental setting of limits and redirection.
Parent can pay attention and stay focused on child for as long as child is able to do so.	Child can pay attention or focus for 15 minutes or more.
Parent supports child's own strategies for recovering from distress.	Child can use imitation to deal with, and recover from, distress.
<i>Potential Negative Contributions to Dysregulation (Risk Factors for Load Conditions)</i>	
Parent is rigid or permissive in limit setting, with too much structure, too much chaos, or a lack of involvement.	Child responds to appropriate limit setting with avoidance, aggression, or rote compliance.
Parent is constricted and repetitive in play, using the same themes over and over again (e.g., always wants play to be happy; does not tolerate any aggression or assertiveness during child's play).	Child is repetitive and perseverates with the same constricted themes in play (e.g., only slamming cars into each other or only lining up cars in a row).
Parent is controlling and always takes the lead, using constricted themes of play, and reacting with aggression if play does not go according to parent's desire.	Child insists on always taking the lead and reacts with aggression or distress if play does not exactly follow his or her plan.
Parent is intrusive, randomly changes the emotional play themes, and does not support child's play.	Child impulsively changes emotional themes or activities during play, randomly moving from item to item.
Parent withdraws and does not support a child's play or exploration; participates in a limited number of circles of communication (one to five).	Child opens and closes a limited number circles of communication (one to five), appearing withdrawn.
Parent is anxious or overprotective and does not support the child's play.	Child is anxious and clinging, refusing to engage in play.

*Note.* From material in "Assessing the Emotional and Social Functioning of Infants and Young Children," by S. I. Greenspan, 1996, in *New Visions for the Developmental Assessment of Infants and Young Children*, by S. J. Meisels and E. Fenichel (Eds.), Washington, DC: ZERO TO THREE. Adapted with permission of ZERO TO THREE. Also from material in *The Functional Emotional Assessment Scale (FEAS) for Infancy and Early Childhood: Clinical and Research Applications* by S. I. Greenspan, G. A. DeGangi, and S. Wieder, 2001, Bethesda, MD: Interdisciplinary Council on Developmental and Learning Disorders. Adapted with permission of Dr. S. I. Greenspan.

### ***Considering Milestone 4 in the Context of the Neurorelational Framework***

Under conditions of healthy development, the alert processing window expands for longer periods of time (regulation), making possible more complex circles of communication. If the infant has achieved stable regulation, a tolerance for sensations (sensory), and an ongoing ability to gain pleasure from an intimate relationship with the parent, then that infant's sense of joy becomes an internal factor that motivates purposeful motor movement (executive). The child's ability for initiating purposeful movement (i.e., moving toward what is relevant to him or her) signals the increasing links forming between the relevance and executive systems. For example, the child can experience increasing delight through exploring his or her surroundings and sharing that joy with a parent. In addition, the child can now begin to initiate simple problem-solving actions in response to his or her own distress by signaling the need for a parent's help (an example of early cause-effect reasoning).

A complex interplay now emerges between the relevance and executive systems. Will this infant, who is blossoming into toddlerhood, continue to build on pleasurable experiences of shared joy and the ability to communicate the need for help? Or will this child experience increasingly prominent states of dysregulation, combined with emotional distress, without being able to find ways to engage the parent in recovery and problem solving? If unresolved or unattended vulnerabilities remain within the regulation, sensory, or relevance systems, the motor elements of the executive system will also be affected. Of course, motor elements can bring their own vulnerabilities to the child (e.g., weak muscle tone, postural instability, or poor motor planning skills). (See CD-ROM Section 3.4 for a summary table listing the contributions of each brain system to this fourth socioemotional milestone.)

### ***Joseph and Rachel: Complex Gestures and Problem Solving***

Joseph continues to focus on his own world of mechanical toys; increasingly, his relevance system has limited experience with circles of communication and relational joy to reference. His behaviors of either avoiding his mother or protesting her intrusions have become entrenched patterns between the two of them, even at his young age. (What a difference early intervention would have made!) Rachel feels alarmed at being shut out; this feeling resonates with her in significant relationships with men. Strategies of withdrawal and opposition are becoming automatic defensive maneuvers between both of them, precluding the building of warm engagement.

Joseph's gestural and verbal systems are not used for relational problem solving. He cries when frustrated, collapsing into a rage rather than signaling the source of his upset. His lack of trust in his mother around problem-solving issues reflects the absence of pleasurable experiences in the relationship. However, Joseph also brings a weak motor system to this expanding problem, a motor system that does not advance his communication signals. If intervention were to begin during this phase, where would the practitioner or team of practitioners begin? As the child gets older, problems often occur when practitioners start interventions at a developmental level that is beyond the child's current status. Beginning at too advanced a level when earlier socioemotional milestones are so shaky can lead to more frustrations for all parties involved. A better approach is to begin the intervention at the earliest level at which the breakdown began, which the neurorelational framework calls a bottom-up approach. In this case, the first goals of treatment are to build on Joseph's sensory and emotional signals of pleasure and to help Rachel join him there, using his sensory preferences to support his regulation. In turn, pleasurable activities can be used as a reinforcing context in which Joseph can be taught various gesturing signs (e.g., simple sign language).

What sensory experiences enhance Joseph's sense of pleasure and joy and optimize his state of arousal? How can Rachel participate in these experiences, which also provide opportunities for sensory–motor connections between them? We now have another avenue through which to build regulation and engagement. Experimentation takes place; we discover that Joseph loves to swing and that placing him in a swing calms him down. To prevent possible auditory overloads, Rachel does not talk. Not having to defend against the sound of her voice, Joseph has more energy to glance at her face when swinging. They quietly make eye contact, and she smiles. With support from the therapist, Rachel is encouraged simply to make eye contact without initiating any other form of stimulation. A visual connection has begun for brief moments, offering hope that this simple, yet powerful beginning can expand.

## Milestone 5: Use of Symbols to Express Thoughts and Feelings

As the rhythm and rate of word production increases, so does the ability to enact everyday life events through playing with toys and dolls. Feeding the baby doll or animal, soothing the baby, putting the baby to sleep, and talking on the phone are daily life activities that are enacted by playing alone or with Mommy or Daddy. As this type of play interaction becomes more sophisticated, the dolls, superheroes, or puppets begin to mirror the

child's emotions—sad or happy or mad—usually through fleeting expressions that may not have a full story to them but that can be “represented” through the child's (or parent's) voice, words, or facial expressions. The ability to put two words together often emerges at about the age of 2 years, when verbalized wishes and intentions, such as “me toy” or “want milk,” and feelings, such as “me mad” or “me hurt,” debut (Greenspan, 1996).

The emerging ability to connect words to bodily states establishes a link between visceral connections and emotions. As states of arousal are linked with a positive or negative valence, we experience emotions. Identifying bodily states such as hunger and pain (negative experiences) or satiety and pain relief (positive experiences) is the precursor to recognizing and naming emotional states. Again, if the bottom-up experiences of pain, hunger, thirst, and bladder and bowel pressure are not recognized or registered, it may be harder for a child to identify emotions later. During this phase, a range of emotional states and themes is desirable. Ideally, the joy from mutual engagement in the earlier phases has created a solid foundation of attachment. Closeness, dependency, pleasure, and excitement with humor are core themes that practitioners want to observe in the pretend life of the child. However, to have a full emotional range, emotional expressions need to include verbal representations of assertiveness, anger, cautious behavior, boundary enforcement (e.g., pretending to say “no” to a doll), and recovering from distress. These should be included in a similar repertoire of positive expressions.

### ***Behavioral Markers for Milestone 5***

Table 3.5 presents the behavioral markers for the use of symbols to express thoughts and feelings as the fifth socioemotional milestone (Greenspan, 1996; Greenspan, DeGangi, & Wieder, 2001).

**Table 3.5. Parent–Child Behavioral Markers for Use of Symbols to Express Thoughts and Feelings**

Parent	Child (observable between 18 and 30 months)
<i>Positive Contributions to Health (Coordination)</i>	
Parent uses nonverbal and verbal forms of communication through eyes, facial expressions, sounds or verbalizations, gestures, and body movement to promote 10 or more sequential circles of communication in a continuous flow.	Child uses nonverbal and verbal forms of communication through eyes, facial expressions, sounds or verbalizations, gestures, and body movement to reciprocate and promote 10 or more sequential circles of communication in a continuous flow.

*(Continued)*



**Table 3.5. Continued**

Parent	Child (observable between 18 and 30 months)
Parent tracks child's nonverbal clues that link with appropriate signals for simple problem solving.	Child tracks parent's cues and participates in simple problem solving.
Parent encourages child's engagement in symbolic play by combining play materials (baby doll, bottle, and bath tub) for that purpose.	Child engages in symbolic play with various toys, going beyond enacting daily life activities of feeding, sleeping, and bathing.
Parent encourages child's engagement in symbolic play by modeling.	Child imitates parental modeling.
Parent shows comfort with make-believe play.	Child enjoys pretend play.
Parent elaborates on child's pretend play by adding complexity to existing theme.	Child can expand play theme.
Parent gives child freedom to express themes of nurturance and dependency without being competitive for nurturance.	Child shows needs for nurturance and dependency and incorporates these needs into play.
Parent sustains pretend play through nonverbal means (e.g., smiling and laughing).	Child shows pleasure through nonverbal means.
Parent sustains pretend play through verbal means (e.g., commenting on how funny something is or what a good idea the child has and by asking questions for elaboration, such as "What happens next?").	Child creates pretend play of two themes that are not logically related or logically connected.
Parent allows child to express themes of assertiveness through pretend play (e.g., putting parent in jail or having parent stay home while child pretends to go to work).	Child uses pretend play to communicate wishes, needs, feelings, and intentions.
Parent supports play themes of closeness and dependency, assertiveness and curiosity, aggression, autonomy, pleasure and excitement, cautiousness or fearfulness, limit setting, and recovery from distress.	Child uses pretend play or words to display at least one idea from any of the following emotional themes during play with parent: closeness or dependency, pleasure and excitement in the context of humor, assertiveness and exploration, cautiousness or fearfulness, anger, limit setting, and recovery from distress.
When playing, parent expands and elaborates on what child is doing while remaining on the child's topic.	Child can focus or pay attention for 30 minutes or more.

*(Continued)*

**Table 3.5 Continued**

Parent	Child (observable between 18 and 30 months)
Parent expansion includes providing a challenge or an interesting dimension to the play that requires from the child a slightly different or new response from previous playtimes.	Child uses pretend play and language to respond to a parent's expansion of a theme or play by also creating a new response or different outcome to a familiar aspect to the story.
Parent allows child to assert self in play.	Child uses pretend play to express theme of assertiveness. Child allows parent to take the lead at times during play.
Parent sets appropriate limits or redirects the child.	Child responds to setting of limits and redirection by parent.
Parent allows child to often take the lead during play.	Child allows parent to take the lead at times during play.
<i>Potential Negative Contributions to Dysregulation (Risk Factors for Load Conditions)</i>	
Parent is either permissive without setting up a structure, or overly harsh and punitive with too much rigidity, or oscillates between these extremes (chaos/rigidity: from too permissive/neglectful to too harsh/abusive).	Child responds to appropriate limit setting with avoidance, aggression, or rote compliance.
Parent only allows certain themes and constricts the play (e.g., always avoiding angry themes).	Child is repetitive and perseverates with the same constricted themes in play (e.g., always showing angry themes).
Parent breaks the flow of playing with child by being intrusive or hostile.	Child insists on always taking the lead and reacts with aggression or distress if play does not exactly follow his or her plan.
Parent breaks the flow of child's play or exploration by withdrawing or does not initiate play (e.g., indifferent).	Child shows indifference to playing with parent.
Parent's anxiety or overprotectiveness breaks the flow of playing with child.	Child is anxious and/or clinging, refusing to engage in play.
Parent breaks the flow of a child's play or exploration by playing at a level far above child's level of competence.	NA
Parent does not show pleasure or excitement in child's play or exploration.	Child does not show any pleasure or delight during playtime with parent.
Parent shows partial pleasure or excitement through a limited number of circles of communication (6–10 circles) during an interaction.	Child opens and closes a limited number of circles of communication (6–10 circles) during an interaction.

*(Continued)*

**Table 3.5 Continued**

Parent	Child (observable between 18 and 30 months)
Parent is distractible and impulsively interrupts play by randomly introducing new items or themes.	Child impulsively changes emotional themes or activities during play, randomly moving from item to item.

*Note.* From material in “Assessing the Emotional and Social Functioning of Infants and Young Children,” by S. I. Greenspan, 1996, in *New Visions for the Developmental Assessment of Infants and Young Children*, by S. J. Meisels and E. Fenichel (Eds.), Washington, DC: ZERO TO THREE. Adapted with permission of ZERO TO THREE. Also from material in *The Functional Emotional Assessment Scale (FEAS) for Infancy and Early Childhood: Clinical and Research Applications* by S. I. Greenspan, G. A. DeGangi, and S. Wieder, 2001, Bethesda, MD: Interdisciplinary Council on Developmental and Learning Disorders. Adapted with permission of Dr. S. I. Greenspan.

### ***Considering Milestone 5 in the Context of the Neurorelational Framework***

At this juncture, we see the emergence of strong connections between bottom-up (regulation and sensation) and top-down (relevance and executive) functions. The interactions involved here focus on organizing meaningful experiences, both positive and negative in valence, into nonverbal (sensory experiences of sounds, sights, touch, etc.) and verbal expressions containing dialogue. The sequential aspects of coordinating emotional themes require executive functions (e.g., cause–effect reasoning, temporal integration) that link the details of past experiences (memory—relevance system) with meaningful emotional themes (emotions—relevance system) in a conversational, two-way flow. Creating sequential events within a simple story line (e.g., baby ate, had a bath, and went to bed feeling happy and safe) demonstrates the capacity for expressing emotional themes through symbolic means.

The emergence of the child’s ability to move beyond daily life activities into more active emotional themes is also an important transition. There may be a smooth transition from the daily activity involved in feeding and putting the pretend baby to sleep to expressing closeness and pleasure in that scenario. The expression of closeness and pleasure through symbolic play is a very important feature, just as mutual engagement and attachment were important during the first few months of life. However, it may be more difficult for the child to expand his or her verbal or pretend play into a pretend character who can be angry about not being first or who can be fearful of the fire that comes out of a pretend dragon’s mouth. These more negatively valenced themes may be more uncomfortable for either the parent or the child. In fact, at times, the parent may have more difficulty participating comfortably in this type of emotional play than the child.

(Indeed, either partner may have more of a struggle at any one time in one of these socioemotional milestones than the other partner.)

The nonverbal sensory aspects of this type of play are integral to the accurate portrayal of emotional themes (relevance system). Sensory experiences include the nonverbal visual expressions, sounds, and movements that are made as one character creates sounds, words, faces, or movement to match pretend scenarios; for example, crying when hungry, squealing with excitement when splashing in a bath, smiling when rocked to sleep, scowling in anger when being left out, and opening eyes wide in fright when facing a character who looks scary. Here the sensory aspects of emotions are enacted within the play zone. Ideally, emotional occurrences in real life are now reenacted between parent and child during play. Sensory expressions make the play come alive; without them, the characters remain lifeless or inaccurately represent the targeted emotional experience (e.g., representing a character who is sad or mad for being left out by showing a face with no expression does little to communicate what the character is feeling).

Of course, any stress patterns that predominate within a parent-child dyad reduce the likelihood that the pair will be able to create simple emotional themes together in a continuous flow. Instead, the pair's typical stress responses will predominate in the play and be expressed in some way. (See CD-ROM Section 3.5 for a summary table listing the contributions of each brain system to this fifth socioemotional milestone.)

### ***Joseph and Rachel: Use of Symbols to Express Thoughts and Feelings***

As time progresses, stress patterns are now typical between Joseph and Rachel. They hardly play together, and Joseph's symbolic play mainly consists of lining up cars or trucks and then banging them into one another in a repetitive mode. He does not fantasize about their having special powers or taking on an emotional theme with the banging. The crashing of the cars holds interest and excitement for him at face value. Rachel does not know how to join in this repetitive and seemingly "utterly boring" play. Things are "okay" at preschool—only a few isolated incidents of aggression out on the playground and a concern that he is not paying as much attention as he needs to have been reported. Nothing is prompting alarm at this point. These complaints are minor and are not consistent enough to warrant further probing by the preschool teacher.

A practitioner who intervenes at this level might have Rachel take a toy car and actually begin crashing it into Joseph's car. If Joseph loves this interaction, then there is all the more reason that this activity may serve as

a point of connection. If all of his collected cars are kept in a box or sack, then Rachel could take them out and hand them one by one to Joseph, facilitating eye contact during this interchange. Over time, perhaps the cars that crash can make sounds together or have a race with each other. Play could gently expand to driving the cars to a joint location and, eventually, taking on passengers who exchange simple verbal conversations. Later on, the car might become tired and need a nap or become hungry and need some gas or get hurt from the crashing and need a doctor to take a look. As passengers take more of a prominent place in the story, they might take on more emotional tones. The slow but steady expansion of symbolic play from repetitive to interactive play would be on its way.

Keep in mind, however, that in our last intervention, we left Joseph in the swing, just beginning to tolerate only eye contact and no other sensory input from Rachel. We need to realize that although the symbolic car play described here may become interactive with enough support and creative experiments in engaging Joseph in his own world of relevance at this age level, we still must attend to the issues with these earlier milestones.

So, back in the swing, we find that Joseph also loves sucking on his pacifier and having blankets piled on top of him. We are slowly discovering his three favorite forms of sensory input: vestibular (swing), oral-motor (pacifier), and deep touch pressure (heavy blankets). Now regulation can occur with rhythmic repetition as he is calmed by swinging, sucking, and deep pressure against his body (sensory system). In addition, mutual engagement and attachment can occur when Rachel narrows her input of sensations to intermittent, playful eye contact with smiles; in this context, Rachel and Joseph might also begin to play peek-a-boo. These earlier milestones cannot be left behind, even if the current milestone is opening up; the earlier relational underpinnings are still weak and must be addressed.

While in the swing, as Joseph is relaxing and beginning to experience warm relational pleasure with his mother, Rachel might eventually add words. Because he loves cars, he may respond to the metaphor of his body being an engine, for example, “Is your tank full? When is your ‘engine’ running ‘just right?’” (Williams & Shellenberger, 1996, pp. 2–6)? “Are you zooming too fast? Can you slow down? Are you going too slow?” Describing his engine as calm and “just right” might offer a way for him to begin to associate words with his relaxed body state. Later on, his verbal capacities can be expanded to include his use of this metaphor (“engine”) to express a general bodily state (e.g., running fast, slow, or just right) as well as various emotional valences (e.g., happy, sad, or mad). This type of layering—of working on more than one developmental milestone at a time—is crucial with older children who have multiple constrictions across the milestones.

## Milestone 6: Bridging Emotional Themes

With maturity comes movement from simple to more complex story lines that involve a more elaborate range of emotions. Pretend play can be extremely unrealistic, yet very real emotions can be expressed through this medium. During this developmental phase, the reasons behind being sad or happy or mad or scared in the play have a connection to some form of human emotional reality. The dragon puppet is scary because he has a red tongue and his face looks mean; he wants to bite because he is hungry, and he steals a baby to eat. The hero is mad at the mean dragon who took away the baby, and the hero is going to save the day by getting the baby back to his or her parents. Mommy and Daddy are worried and looking for their baby, and the happy ending is that the baby and parents find each other and are reunited with the hero's help. They have a celebration when they are safely reunited. This simple story line has multiple emotional themes within it: danger, meanness, anxiety, fear, safety, kindness, and joy, to name a few. The story has rhyme and reason to it. By asking the "who, why, what, where, and how" questions, the parent or professional can help the child begin to make cause-effect links between the emotions described in the story and the characters' actions. These understandings, in turn, can begin to generalize to real-life situations.

More mature sequences of emotional events are contained in stories encountered during school years, wherein characters are often confronted by an emotional dilemma to solve. Adult versions of this level of emotional development include elaborations of one's complex emotional self, the ability for abstract thinking, and the processing of conflict in intimate relationships.

### ***Behavioral Markers for Milestone 6***

Table 3.6 presents the behavioral markers for bridges between symbols and emotional ideas (Greenspan, 1996; Greenspan, DeGangi, & Wieder, 2001).

### ***Considering Milestone 6 in the Context of the Neurorelational Framework***

Assuming that regulation and sensory systems are functioning well, a young child can interact with focused attention (regulation and executive systems), using all sensory modalities (i.e., touch, sound, sight, movement, deep-touch pressure) with his or her parent in building emotional stories. For example, the same dragon character might feel bad later for stealing this family's baby and express sadness about how he frightened the family, driven by his impulsive haste while hungry. The dragon apologizes

**Table 3.6. Parent–Child Behavioral Markers for Bridging Emotional Themes**

Parent	Child (observable between 30 and 48 months)
<i>Positive Contributions to Health (Coordination)</i>	
Parent uses nonverbal and verbal forms of communication through eyes, facial expressions, sounds or words, gestures, and body movement to promote an ongoing flow of circles of communication in the play medium.	Child uses nonverbal and verbal forms of communication through eyes, facial expressions, sounds or verbalizations, gestures, and body movement to reciprocate and promote an ongoing flow of circles of communication in the play medium.
Parent elaborates on child’s pretend play, giving depth to the drama by asking who, where, what, how, why, or when questions.	Child shows a planned quality to the story line and can elaborate on when, how, and why questions.
If child strays off topic, parent asks questions to help make bridges back to the pretend play theme (e.g., “What happened to the alligator? He was hungry and going to eat the fish, and now, you are playing with a superhero”).	Child allows parent to take the lead at times during play.
Parent assists child in incorporating causality into pretend play themes by asking reality-based questions (e.g., “How come the alligator is so mad now? Did he get his feelings hurt by Superman?”).	Child can respond to inquiries by making cause–effect links between events and emotional outcomes.
Parent helps expand and elaborate a wide range of emotional themes, building on others that now include assertiveness, pleasure and excitement, fearfulness, anger, separation and loss, and empathy.	<p>Child can both initiate and build on parent’s contribution to an emotional theme.</p> <p>Child uses pretend play or language to communicate two or more emotional themes at a time.</p> <p>Child creates themes of closeness and dependency, pleasure and excitement in the context of humor, and assertiveness.</p> <p>Child’s themes expand to include separation and loss, love, and empathy.</p>
Parent supports and guides emotional problem-solving experiences through emotional themes.	Child proposes creative, problem-solving ideas when expressing emotional themes.
Parent is comfortable with a wide range of emotional themes and shows no discomfort or intrusion in the child’s expressions.	Child can tolerate exploring vulnerable feelings of shame, embarrassment, jealousy, and envy during playtimes.

(Continued)

**Table 3.6. Continued**

Parent	Child (observable between 30 and 48 months)
Parent sets appropriate limits or redirects the child.	Child responds to parental setting of limits and redirection by parent.
When child is upset, parent tracks the process, allowing the child space or offering sensory or emotional comfort until recovery to baseline has occurred.	When upset, child can use a combination of self- and interactive regulation strategies to recover back to baseline. Child can set limits for self by reasoning about consequences.
<i>Potential Negative Contributions to Dysregulation (Risk Factors for Load Conditions)</i>	
Parent does not show pleasure or delight during playtime with child.	Child does not show pleasure or delight during playtime with parent.
Parent stays within constricted themes, such as primarily expressing positive or negative emotions without the full range.	Child perseverates on the same constricted themes in play (e.g., only playing with the same theme or scripted lines from a story line or movie such as Peter Pan, Cinderella).
Parent intrudes during playtime with child by reacting aggressively or hostilely to child's expressions of an emotional theme.	Child insists on always taking the lead and reacts with aggression or distress if play does not exactly follow his or her plan.
Parent is overly hostile in discipline and punishment of child. Or, parent is overly accommodating of child.	Child responds to appropriate limit setting with avoidance, aggression, or rote compliance.
Parent's anxiety intrudes during playtime with child and diverts attention away from expanding child's theme.	Child is anxious and withdrawn, unable to participate in play.
Parent withdraws or dissociates during playtime with child.	Child is shut down with glazed eyes, not connecting to the parent or play.
Parent impulsively changes emotional themes or activities during play or is easily distracted.	Child impulsively changes emotional themes or activities during play, randomly moving from item to item.

*Note.* From material in "Assessing the Emotional and Social Functioning of Infants and Young Children," by S. I. Greenspan, 1996, in *New Visions for the Developmental Assessment of Infants and Young Children*, by S. J. Meisels and E. Fenichel (Eds.), Washington, DC: ZERO TO THREE. Adapted with permission of ZERO TO THREE. Also from material in *The Functional Emotional Assessment Scale (FEAS) for Infancy and Early Childhood: Clinical and Research Applications* by S. I. Greenspan, G. A. DeGangi, and S. Wieder, 2001, Bethesda, MD: Interdisciplinary Council on Developmental and Learning Disorders. Adapted with permission of Dr. S. I. Greenspan.

and, over time, joins forces with the hero by flying over the city to help find some bad guys who are trying to rob the same family of its secret jewels. The dragon catches the bad guys, blows fire on them, and the bad guys have to go to hospital jail, where a doctor takes care of their wounds.



Characters can now express more than one meaning and both positive and negative valences.

At this milestone we see a wider range of negative and vulnerable emotional experiences in the stories integrated with a positive baseline: themes of anger, fear, embarrassment, disappointment, loss, and the capacity for empathy are expanded. The emerging ability to elaborate on several emotional themes that link cause and effect (e.g., a new baby is cause for jealous feelings) relies heavily on the overlap between the relevance and executive systems. The sequencing and planning of a story line that holds coherent meaning are akin to the steps involved in motor sequencing, planning, and action. Children who are impulsive in their attention (executive system) or do not make meaningful emotional connections (relevance and executive system) will have trouble creating a coherent story. Helping children structure or sequence the telling or enactment of an emotional story is a top-down strategy. Inherent in any story is a problem or crisis in need of resolution. This is as true for a 3- or 4-year-old's story as it is for adult literature. The problem portrayed in any pretend story offers a key opportunity for intervention: how does the child or parent relate to a character who is sad, mad, happy, jealous, bullying, shy, embarrassed, or frightened by us or with us? Daily life dilemmas among parents, children, siblings, friends, and "bad guys"—even among various aspects within oneself (e.g., the kind self versus the mean self)—have an opportunity to be expressed through the medium of play. A 3-year-old encountering a character who is having a temper tantrum in the story (just like the way the child happens to act at home) has an opportunity, with the help of the therapist or parent, to solve the "problem." This experience can be a pleasurable one that, indeed, enhances self- and interactive regulation; with the parent or therapist's guidance, the child uses words to sequence the steps needed to regulate the character with the tantrum. Encouraging problem-solving skills, which support the further development of the executive system, can become an integrated part of the creative play ("What can this character do next time to not get so upset?") and can help build skills for anticipating distress and managing it via new options in the future.

Notice that nonverbal and sensory aspects (sensory system) of how emotions are communicated (eyes, faces, vocal tone and rhythms, gestures, and movements) remain integral to the child's emerging ability to both express emotions and read them in others (relevance system). The more a parent embraces a full range of emotions within the real parent-child relationship, the more likely the child will be able to rehearse, enact, and experiment with those emotions through play. The more constricted the range of emotional expression in a family system, the more likely it is that the child's expressions of emotions will be constricted during play.

Parents who are uncomfortable with particular emotions will probably bring intrusions or constrictions into the play space. Conversely, children with physiological and learning challenges will likely bring restrictions that will need assistance.

The use of temporal integration (the use of past, present, and future) and sequencing (executive system) allows the child to apply a theme from one story in one week to another theme in the creation of a new story 8 days later. The executive system as a whole supports the child's efforts to elaborate emotional themes into coherent stories that have a beginning, middle, and end. Flexible interaction across all brain systems supports the spontaneous and creative expansion of emotional themes into new and different twists and turns. (See CD-ROM Section 3.6 for a summary table listing the contributions of each brain system to this sixth socioemotional milestone.)

### ***Joseph and Rachel: Bridging Emotional Themes***

Interventions that involve Milestone 6 can build on those begun in Milestone 5. As Joseph shifts from crashing cars to tolerating the presence of passengers (Milestone 5), the passengers can begin to develop real-life emotions as the practitioner's and Rachel's characters include a variety of different emotional expressions through facial movements, vocal tones, and gestures. The passengers might share names and end up as neighbors. The characters decide that they are friends and visit each other's home (perhaps made out of blocks or Lincoln Logs). Over time, emotional themes shift from positive to negative to positive valences, or vice versa. Soon, two neighbors become jealous of their neighbor's new car and decide to have a race to see which car runs the fastest. The winner (perhaps Joseph) might have to "help" the other two friends with their sadness or jealousy about not winning. If Joseph doesn't offer any help, the practitioner's character can jump in with empathy to comfort the others, modeling a responsive reaction that facilitates emotional recovery. In these imagined scenarios, we can see the flow of many positive and negative emotional themes (relevance system) being enacted with a beginning, middle, and end sequence that also links cause with effect (executive system). Joseph's interest in cars is now much more involved, and themes of friendship, nurturance, competitiveness, jealousy, disappointment, loss, recovery, and compassion become intertwined with meaning as characters take on real-life emotional reactions through the ebb and flow of play (more on emotional themes in the relevance system).

However, without that sort of intervention, by the time Joseph matures through this developmental period and approaches the age of 5 years, he has accumulated a cascading array of difficulties that now extend into his daily school life. Gone are the days of intermittent concerns during

the earlier years at preschool. Alarms are going off on all levels. Teachers complain that he does not listen or pay attention when he is not interested in the subject matter, and he is either combative or isolating himself on the playground.

Rachel's attempts to respond appropriately to Joseph have failed. Now, confronted with his vicious temper tantrums, she tries to implement a behavioral modification plan she has seen on a popular television show, instituting time-outs. Over time, however, Joseph's behavior does not improve with time-outs. Instead, he becomes more cruel and then violent toward his siblings. Having a lay person's limited understanding of negative reinforcement, Rachel slowly increases his time-outs to where they last up to 1 hour at a time. His continued defiance and lack of regulation control provoke Rachel to revoke further privileges from him, including dinner. His rageful and violent behavior causes Rachel to lock her son in his room during these episodes to prevent dangerous outcomes, such as breaking fragile objects and leaving shards of cut glass everywhere.

When Joseph gets into treatment at this age, he uses pretend play to put his therapist into time-outs every session, locking the door and throwing away the key. He screams and yells at the therapist that she has to stay in there "for a long, long time." Every time she asks whether she can come out, he ragefully insists that she must remain in her room without dinner or dessert. The therapist's first assessment and working hypothesis is that of a traumatic-type response because Joseph demonstrates the type of constrictive and repetitive play scenario that often accompanies traumatized children's reenactment of their experiences. Rachel admits that things have been out of control, but she explains that had she not enforced the behavioral measures she learned on television, Joseph would have harmed himself, her, or his siblings. Using a strength-based therapeutic approach (Bernstein, Hans, & Percansky, 1991; McDonough, 1995, 2000, 2004) the therapist supports Rachel's need to protect herself and the other siblings from Joseph's rages; she also explains that this is a critical situation that needs immediate attention and that they can experiment together to find new ways to help Joseph. Rachel is more than willing to learn and take direction, and she and the therapist establish a learning relationship where they share their observations. Slowly, with a bottom-up approach, Rachel and the therapist begin to find (1) sensory ways to soothe and engage Joseph, (2) words for his emotions, (3) alternate ways for him to express his rage, and (4) ways for him to begin to care for himself and others.

Chapter 1 listed a range of possible diagnostic categories that a practitioner might identify for Joseph and Rachel:

- a possible trauma response for Joseph, related to a poor connection with his mother;

- regulatory and sensorimotor processing problems for Joseph;
- a mood component of anxiety, depression, and anger for both Joseph and Rachel;
- an attentional, executive problem for Joseph;
- an autistic spectrum disorder or Asperger syndrome for Joseph;
- a lack of proper parenting skills;
- a painful relational history for Rachel, highlighting disappointment and loss;
- a relational/attachment problem (in the parent–child dyad);
- a marital problem (for the couple).

In fact, Joseph and Rachel now suffer from every one of these diagnostic categories; his primary diagnosis is listed as Asperger syndrome. As the treatment unfolds and the therapist begins to work through the turmoil both Joseph and Rachel have endured and stimulated within each other—albeit through well-meaning intentions and the common wisdom within our parenting culture—each one of these diagnostic labels becomes clinically relevant. Although holding in mind multiple diagnostic categories is certainly an option for organizing one’s clinical judgment, seeing the underlying contributions from the four brain systems to each diagnosis may provide greater clinical clarity.

The discussion in this chapter points to the salient need for early intervention, well within Joseph’s first year of life, as a viable way to have minimized the repercussions of his early symptoms and conditions. For example, even given his Asperger syndrome, Joseph could have made much more progress developmentally, and Rachel’s frustration and sadness could have been greatly diminished. The clinical discussion in Chapter 2 focused on the four neurorelational brain systems as they applied to Joseph and Rachel. The integration of those brain systems and intervention strategies within the six socioemotional milestones presented in this chapter allow us to see the power of using a brain-based approach to assessment and intervention right from the start.

Additional resources on socioemotional milestones include the following texts:

- Axis V in DC:0–3R (ZERO TO THREE, 2005);
- Greenspan’s (1996) chapter, “Assessing the Emotional and Social Functioning of Infants and Young Children,” in *New Visions for the Assessment of Infants and Young Children*;
- Greenspan (1999), *Building Healthy Minds*;
- Greenspan and Wieder (1998), *The Child With Special Needs*;

- Greenspan, DeGangi, and Wieder's (2001) clinical and research versions of the FEAS, in *The Functional Emotional Assessment Scale (FEAS) for Infancy and Early Childhood: Clinical and Research Applications*;
- Interdisciplinary Council of Developmental and Learning Disorders (ICDL) Web site: [www.icdl.com](http://www.icdl.com)

## THE USE OF INTERPERSONAL MODES IN THE NEURORELATIONAL FRAMEWORK

During the 1970s, the emotional styles of behavior emerged as a personality theory from the Family Studies department at Michigan State University. Three simple yet intuitively meaningful styles were presented as the “head, heart, and hand” rubric, in which individual and interpersonal ways of relating could be classified. The *heart* is oriented toward the use of emotions and feeling, the *hand* is oriented toward the use of actions and doing, and the *head* is oriented toward the use of thoughts and thinking. The predecessors of this heuristic can be found in the three philosophical traditions of humanism (heart), empiricism (hand), and rationalism (head) that can also be seen as underlying three predominant trends in psychological theories: humanistic, behavioral, and cognitive (Dobbs, 2000). This heuristic has shown up in many formats over the centuries. Its components are not new; if anything, they keep reappearing in new formats,<sup>1</sup> but are deeply rooted in how we understand ourselves and our relationships with others.

One more recent format comes in the form of an empirically based research instrument—the Strength Deployment Inventory (SDI)—used to investigate the motivational styles of 516 interdisciplinary health care professionals over a 10-year period. The researchers measured the fluctuations between three personality constructs of altruistic-nurturing (which we correlate with heart), assertive-directive (hand), and analytic-autonomizing (head) designed “to help individuals identify their motives in relating to others under two kinds of conditions: when everything is going well in their relationships and when they are in conflict with others” (Drinka, Miller, & Goodman, 1996, p. 51). Similarly, we use this heuristic to help individuals and professionals identify their interpersonal modes under conditions of safety, challenge, and threat.

The neurorelational framework views the head, heart, and hand metaphor as applicable to multiple contexts: from individual ways of being in the world, to parenting modes that promote development, to varying therapeutic approaches to children and families, and to interdisciplinary team dynamics. Within each of these contexts, the healthy versions of this

triad support coordination, whereas the unhealthy versions support conditions of load. To convey added nuances of relational characteristics, we use the terms of *respond* (heart), *direct* (hand), and *reflect* (head) to differentiate the coordination versions of the triad, and we use the terms *overaccommodate*, *demand*, and *detach* to convey the potential load versions of these three interpersonal modes of relating.

We begin with the underlying premise that there is “purpose or motive behind all behavior” (Drinka et al., 1996, p. 51), and we emphasize the powerful early linkages between the emotional (relevance) and motor (executive) systems. When newborns move their eyes and head, as they turn toward or away from others, they are expressing emotional-action tendencies. As development of the motor system progresses into crawling and walking, these emotional-action tendencies become even more pronounced (during socioemotional Milestone 4) and gradually develop into interpersonal modes of relating (Horney, 1945, 1950).

The neurorelational framework emphasizes the early beginnings of three modes of interpersonal behavior that are healthy and become automatic with repetition (see Figure 3.1).

Practitioners might ask the following assessment questions:

- Does an infant-toddler naturally move toward others, initiating emotional connections even when upset?
- When upset with others, does the infant-toddler “stand up to them” by crying or protesting vocally?
- Does the infant-toddler physically and emotionally withdraw from others when upset for a short period of time, wanting to be left alone?

In older children, adolescents, and adults, when these interactional modes become rigid (overused) or chaotic, they can become maladaptive, as indicated in Figure 3.2. These more extreme behaviors are discussed in later chapters.

The following paragraphs introduce the coordination version of the respond, direct, and reflect modes of interpersonal behavior as they relate to the clinical context in the neurorelational framework. Interventions can be seen as promoting different types of learning as exemplified in the interpersonal modes of behavior. The neurorelational framework makes equal use of all three modes. The respond approach to intervention values learning through emotions, which includes any type of engaging and nurturing (Ammen & Limberg, 2005; Jernberg & Booth, 1999); mirroring and empathy (for building a positive therapeutic alliance, McDonough, 2000; for transforming internal representations, Lieberman,

Emotionally engages with others	Emotionally stands up to others	Emotionally withdraws from others
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**Figure 3.1.** Precursors to the respond, direct, and reflect interpersonal modes that support coordination.

Overly accommodates and relies on others or anxiously controls others	Overly opposes and demands from others	Overly detached from others
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**Figure 3.2.** Three interpersonal modes of behavior that can contribute to conditions of load.

1991; Lieberman, Silverman, & Pawl, 2000; Lieberman, Weston, & Pawl, 1991; and for building connections and collaboration, Downing, 2008); and validation or active listening (Faber & Mazlish, 2002) one gives to an individual or family. When these skills are modeled and demonstrated, they can be learned through imitation. The neurorelational framework emphasizes the importance of establishing a strong therapeutic alliance as the basis for connecting with families. Such an alliance is maintained throughout the course of treatment with both child and parents. Someone whose personality orientation is based on the responsive approach would be comfortable expressing warmth and empathy and would prefer compromising in conflict; in general, he or she would prefer to seek harmonizing relationships in responding to everyday situations in life (Dobbs, 2000).

The direct approach values learning through doing or action and includes any procedure one applies to the child and family, including structuring and challenging (Ammen & Limberg, 2005; Jernberg & Booth, 1999); coaching (Wieder & Greenspan, 2005); directing, dramatic play, role-play, social skills (Mesibov, 1984; Rogers, 2000); and context and skill-building remediation (Hinckley, Patterson, & Carr, 2001; Johnson, 2004). Often, remediation techniques for learning speech and language, motor, social, relational skills, and so on, follow a continuum: At one end they can be process oriented, interactive, and following the child’s personal interests (constructivist remediation); at the other end they can be teacher-led, product-oriented, noninteractive, and highly prearranged (instructionist remediation) (Johnson, 2004). This range within types of interventions can also include approaches to medical procedures. The phrase “the action is in the interaction” (Shahmoon-Shanok, 2000, p. 333) captures the emphasis of the neurorelational framework on learning through experiences. If the parents have the flexibility to learn through coaching or modeling, then the interpersonal domain, via play, can be used as the active relational medium through which change is fostered. “Doing” in

the form of “playing” is a child’s language (Frost, Wortham, & Reifel, 2001), regardless of the skill being learned (e.g., motor, sensory, emotional, educational capacities), and it is the medium through which constricted interpersonal modes can also be altered (Greenspan & Wieder, 1998). By having the parent present and working within the context of the dyad, the professional can help parent and child shift interpersonal patterns at the same time important functional skills are being learned (e.g., speech and language, motor, reading). Someone whose personality orientation is toward the directive approach would be comfortable with setting boundaries, supporting autonomy (Downing, 2008), initiating action, giving instructions, and tolerating conflict; he or she would prefer to press for results and measurable outcomes in responding to everyday situations in life (Dobbs, 2000).

The reflect approach values learning through thinking and the use of the mind, which includes any type of education one teaches to a family. In addition, some clinical traditions highlight the importance of gaining insight through self-reflection on the past, insight-oriented interpretation (Lieberman et al., 1991), understanding the meaning of one’s behavior, self-observation, and awareness in-the-moment (Siegel, 2007a, 2007b; Siegel & Hartzell, 2003; Stern, 2004), and analysis of beliefs (Sigel, McGillicuddy-De Lisi, & Goodnow, 1992). In addition to insight and self-reflective capacities, this interpersonal approach can facilitate relational negotiations (Downing, 2008) and collaborative problem solving (Greene, 2001; Greene, Ablon, & Goring, 2003; Greene et al., 2004), and metacognitive skills (Schraw, 1998). Often these skills have to be taught to a child and scaffolded by an adult to be learned. These strategies are emphasized in the relevance and executive systems as reflections on personal meanings (referred to as “representations” in infant mental health; Maltese, 2005), increasing self- and other-awareness, and problem-solving abilities emerge. Someone whose personality orientation is based on a reflective approach would be comfortable with gathering knowledge, using logical analysis, appealing to rules and facts, and using insight; he or she would prefer self-reliance in responding to everyday life situations (Dobbs, 2000).

In actuality, there are many ways in which these three respond, direct, and reflect orientations to learning can play out in practice, in personalities, and in interpersonal dynamics in families and on an interdisciplinary team. In the experience of one of the authors (CL), the process of treatment draws on these three modes initially in an unfolding, sequential manner. First, the professional works to establish the therapeutic alliance (responsive mode), then moves onto specific action-based interventions (direct mode), and culminates in a feedback process (reflect mode). As the



treatment progresses, these modes are used in an increasingly dynamic manner. The relevance system chapters further elaborates these three orientations as essential parenting modes to the development of a child's self in relationship to others. When we use the term *relationship-based approaches*, we are referring to intervention approaches that rely on the context of relationships as central to the focus of intervention (Stern, 1995; Weston, Ivins, Heffron, & Sweet, 1997), recognizing that relationships organize development and shape and facilitate learning. Some clinical models and personalities may be weighted strongly toward one of the three orientations; others may function in a variety of ways, yet still maintaining particular strengths. For example, Susan McDonough's Interactive Guidance (1995, 2000, 2004) clinical approach blends a strong responsive purpose (engaging resistant parents by means of therapeutic alliance) with a reflective element that remains empathetic and strength-based (viewing and discussing with parents videotaped replay of their live parent-child interactions). Thus, although there is an integration here of responsive and reflective orientations, a particular strength of Interactive Guidance is its responsive emphasis on how to engage, build, and maintain a strong alliance with difficult families who might otherwise be viewed as noncompliant or oppositional.

In terms of personal emotional styles, in addition to blending two or three elements, a person might shift between them. These shifts can be productive (shifting from a smiling face to a firm "no" when a child goes near an electrical outlet), but they can also be unproductive. For example, a parent could oscillate between being firm and directive about no treats before dinner and giving in quickly to a whining child by changing the rules to "okay, just one cookie" (an oscillation from direct to respond), creating a situation with unclear limits.

The neurorelational framework encourages the ongoing and long-term goal of developing the ability to integrate and productively shift among the respond, direct, and reflect ways of learning and relating, according to the context. For practitioners,<sup>2</sup> the first challenge is to increase one's self-reflection, considering whether one is more affectively oriented (responsive), action-oriented (directive), cognitively/insight-oriented (reflect), or some type of blend. Through this exercise, practitioners can become more aware of the strengths and limitations of each of these orientations, and this knowledge can guide their continual journey toward maturation and growth.

The global introduction to the neurorelational framework of Part I now prepares us for Part II, in which we provide detailed explorations of each brain system, with an emphasis on pertinent behaviors to observe, along with assessment and intervention principles and strategies.

## NOTES

1. Karen Horney's (1945, 1950) work within the interpersonal perspective of psychoanalysis also provides a parallel triad of moving toward, against, and away, offering another foundation for the triadic emotional and interpersonal modes of interactions that will be discussed throughout this book

2. Any number of disciplines can use the neurorelational framework. We use the terms *therapist*, *practitioner*, and *professional* interchangeably to imply any person who works with infants, children, and their families.