

## CHAPTER 3

# The Role of Healthy Relational Interactions in Buffering the Impact of Childhood Trauma

CHRISTINE R. LUDY-DOBSON  
BRUCE D. PERRY

Humans are social creatures. We live, work, and grow up in social groups. For the vast majority of the last 200,000 years, humans have lived in multigenerational, multifamily hunter-gatherer bands characterized by a rich and continuous relational milieu; the concept of personal space and privacy is relatively new. Child mortality during our history was high; children were highly valued by the band and in these groups of 40–60 members, there were roughly four developmentally more mature potential caregivers for each child under the age of 6. This enriched relational ratio helped the group protect, nurture, educate, and enrich the lives of each developing child.

These living groups were the source of safety and sustenance for individuals in a dangerous world. Survival depended upon the ability to communicate, bond, and share with and receive from other members of the band. Then, as today, the presence of familiar people projecting the social-emotional cues of acceptance, understanding, compassion, and empathy calmed the stress response of the individual. We feel safest in the presence of familiar and nurturing members of our family and com-

munity. These powerful regulating effects of healthy relational interactions on the individual—mediated by various key neural networks in the brain—are at the core of relationally based protective mechanisms that help us survive and thrive following trauma and loss. Individuals who have few positive relational interactions—a child without a healthy family/clan—during or after trauma have a much more difficult time decreasing the trauma-induced activation of the stress response systems. The result is an increased probability of developing trauma-related problems. Further, children in a relationally impoverished setting will likely be unable to recover or heal from these effects without a change in the relational milieu. Positive relational interactions regulate the brain's stress response systems and help create positive and healing neuroendocrine and neurophysiological states that promote healing and healthy development both for the normal and the maltreated child.

There is another aspect to the interconnectedness of the stress response and relational neurobiology. Human history, to this very day, is characterized by clan on clan, human on human competition for limited resources. Indeed the major predator of humans has always been other humans. In our competitive, violent past, encounters with unfamiliar nonclan members were as likely to result in harm as harmony. As the infant becomes the toddler and the toddler becomes the child, the brain is making a catalogue of “safe and familiar” attributes of the humans in his or her clan; the language, the dress, the nonverbal elements of communication, the skin color of the family and clan become the attributes of “safe and familiar,” which, in future interactions with others, will tell his or her stress response networks to be calm. In contrast, when this child interacts with strangers, the stress response systems activate; the more unfamiliar the attributes of these new people, the greater the activation. In some cases, a clan's beliefs may have exacerbated this response; if the child grows up with ethnic, racial, or religious beliefs and values that degrade or dehumanize others, the stress activation that results in an encounter with different peoples can be extreme. In this case, relational interactions activate and exacerbate trauma-related stress over activation. A recent study by Chiao and colleagues (2008), for example, has shown that fear-related social cues from individuals from one's own group/ethnicity have greater “power.” We are more tuned into people in our own “group.” Fear of a member in our group will induce greater amygdalar activation than similar cues from nongroup members.

The social milieu, then, becomes a major mediator of individual stress response baseline and reactivity; nonverbal signals of safety or

threat from members of one's "clan" modulate one's stress response. The bottom line is that healthy relational interactions with safe and familiar individuals can buffer and heal trauma-related problems, whereas the ongoing process of "tribalism"—creating an "us" and "them"—is a powerful but destructive aspect of the human condition that only exacerbates trauma in individuals, families, and communities attempting to heal.

## THE IMPACT OF CHILDHOOD EXPERIENCES

The experiences of early life have the profound ability to shape the infant, child, adolescent, and ultimately the adult. Each child has his or her own unique genetic potential, yet this potential is expressed differentially depending upon the nature, timing, and patterns of developmental experience (see Perry, 2001, 2002). An understanding of how early experiences shape neurodevelopment is imperative if we seek to impact the lives of children with whom we live and work. This is especially true in the case of children growing up in homes plagued by violence, maltreatment, and neglect.

For many, childhood is a very violent time; for others, childhood is permeated with unpredictability, chaos, threat, and other forms of adverse developmental experience. There is a wealth of research describing the negative impact of childhood trauma on the physical, behavioral, cognitive, social, and emotional functioning of children (Perry & Pollard, 1998; Bremner & Vermetten, 2001; Read, Perry, Moskowitz, & Connolly, 2001; Malinosky-Rummell & Hansen, 1993; Fitzpatrick & Boldizar, 1993; Graham-Berman & Levendosky, 1998; Margolin & Gordis, 2000; Sanders-Phillips, 1997; Berenson, Wieman, & McCombs, 2001; Anda et al., 2006). Children exposed to trauma have increased neuropsychiatric problems (e.g., posttraumatic stress disorder [PTSD], depression, dissociation, conduct disorders), school and academic failure, involvement with the juvenile justice system, drug and alcohol use, antisocial behaviors, and engagement in high-risk sexual behavior and teenage pregnancy. The impact of early trauma is so profound because it occurs during those critical periods when the brain is most rapidly developing and organizing. Because the experiences of early life determine the organization and function of the mature brain, going through adverse events in childhood can have a tremendously negative impact on early brain development, including social and emotional development.

## THE HUMAN BRAIN AND THE IMPACT OF TRAUMA

The brain of a newborn is composed of billions of neurons and glial cells that, from conception, have been changing—dividing, moving, specializing, connecting, interacting, and organizing. This organization takes place from the bottom, simplest area (brainstem) to the highest, most complex (cortex). The various functions of the brain parallel this structure: The brainstem regulates the simplest reflexive functions (e.g., body temperature and heart rate), and the cortical areas mediate complex functions such as abstract thought and language (Perry, 2001). The brain is a use-dependent organ that changes in response to patterned, repetitive activity. Thus the more any neural network of the brain is activated, the more that part will change. Among other things, this process is the basis for memory, learning, and development.

All experience, therefore, changes the brain—even if in the subtlest, microscopic ways. Yet experiences in childhood have disproportionate power in shaping the brain. Early in life the brain organizes at an incredible rate, with more than 80% of the major structural changes taking place during the first 4 years. Experiences that take place during this window of organization have a greater potential to influence the brain—in either positive or negative ways. Because the majority of brain growth and development takes place during these first years, early developmental trauma and neglect have a “disproportionate influence on brain organization and later brain functioning” (Perry & Hambrick, 2008; see also, Perry, 2008). Unfortunately, traumatic experiences that take place during this critical window impact the brain in multiple areas and can actually change the structure and function of key neural networks, including those involved with regulating stress and arousal (Perry, 2008). These stress response systems in the brain are designed to sense and respond to threats, either from internal (body) or external sources. Thus, the end effect is that children who are exposed to chronic threat develop overactive and overly reactive stress response neural systems. In short, they live in a persistent state of fear. Although these neuronal changes are useful and protective when the child is living in an abusive environment, they lead to problems in other settings. For example, a hyperaroused child is often preferentially alert to non-verbal cues, which is adaptive with an unpredictable, violent parent but maladaptive in a classroom where the child will miss much of the verbal information presented by a teacher.

As the brain develops in a use-dependent manner, it requires stimulation at specific times in order for the systems to function at their best

(see Perry, 2001; Perry & Szalavitz, 2007). If these sensitive periods of development are missed, “some systems may never be able to reach their full potential” (Perry & Szalavitz, 2007, p. 85). Inconsistent, abusive, or neglectful caregiving in early childhood alters the normal development of neural systems involved in both relationships and the stress response. It is through patterned, repetitive neural stimulation provided by consistent, nurturing, predictable, responsive caregivers that the infant’s brain receives what is needed to develop the capacity for healthy attachment and self-regulation capabilities. The caregiver becomes the external stress regulator for the infant. However, if the caregiver is depressed, stressed, “high,” inconsistent, or absent, these two crucial neural networks (relational and stress response) develop abnormally. The result is a child more vulnerable to future stressors and less capable of benefiting from the healthy nurturing supports that might help buffer stressors or trauma later in life.

These early developmental experiences with caregivers create a very literal template or set of associations for the child’s brain about what humans are. The brain of a child growing up in a home with attentive, attuned caregivers will create a template of humans as safe, predictable, and a source of sustenance, comfort, and pleasure. The brain of a child living in a home plagued by domestic violence and whose primary caregiver is preoccupied and chaotically neglectful will create a template in which humans are unpredictable and a source of fear, chaos, pain, and loss. Children carry these templates created by their initial caregiving experiences into all future relational interactions, either increasing or decreasing their capacity to benefit from future nurturing, caring, and invested adults. Relationships in early childhood, then, can alter the vulnerability–resilience balance for an individual child. Negative or neglectful primary caregiving relationships have the capacity to increase the likelihood that the child will have a more vulnerable, dysregulated stress response network and a less receptive relational capacity to buffer and heal following trauma as the child grows.

## **SOCIAL AND EMOTIONAL DEVELOPMENT**

Understanding healthy social and emotional development in children underscores why disruptions to, or disorganization in, early attachment has such far-reaching implications. *Attachment* is defined as an enduring relationship with a specific person that is characterized by soothing, comfort, pleasure, and safety. It also includes feelings of intense distress

when faced with the loss, or threat of loss, of this person. By far the most important attachment relationship is that of mother and infant. Even before birth, the emotionally healthy mother begins the process of attaching to her baby as she grows attuned to its patterns of movement and the way it responds to stimuli such as sound (Greenspan & Wieder, 2006). Bowlby (1969) describes maternal–infant attachment as a reciprocal relationship. Greenspan and Wieder (2006) note that “the rhythmic, near-synchronous patterns of movement and vocalization between infant and caregiver enable the infant to begin attending to and appreciating the world” (pp. 14–15). In fact, many have aptly described this mother–infant relationship as a dance, the moves of which will be used with many partners throughout the child’s life.

The importance of healthy attachment has been extensively studied. Research in this area has identified four categories of attachment: secure, insecure-resistant, insecure-avoidant, and insecure-disorganized/dis-oriented. Securely attached children feel a consistent, responsive, and supportive relation to their mothers even during times of significant stress. Children with insecure attachment feel inconsistent, punishing, unresponsive emotions from their caregivers and feel threatened during times of stress. Ainsworth, Blehar, Waters, and Wall (1978) posited that the type of attachment a child develops is dependent on the kind of caregiving received during the first year of life. A solid and healthy attachment with a primary caregiver predicts healthy relationships with others as the child grows.

Development in many other areas is rooted in the development of a healthy attachment to a primary caregiver. These areas include development of emotional, social, cognitive, and self-regulatory capabilities. These first relationships, including those formed with other significant people during early childhood, “are the prism through which young children learn about the world, including the world of people and of the self” (Thompson, 2002, p. 10). These early experiences literally provide the organizing framework for the infant/child. Regulation of the infant’s emotional states develops through the repeated appropriate responses of an attentive, attuned caregiver to the baby’s changing emotional states (e.g., fear, anger, distress). Through this consistent, predictable, and repetitive nurturing the child develops the capacity to self-regulate these emotional states as well as to communicate his or her emotions (Emde, 1998). These nurturing behaviors also provide feelings of safety and security. According to Lyons-Ruth and Spielman (2004), a mother’s capacity to regulate her infant’s distress and fear is vital to the child’s ultimate sense of security.

The timing of relational interactions is critically important for the development of attachment and social–emotional functioning. An absence of nurturing during the first 3 years of life can lead to disorganization of the neural systems that mediate social–emotional functioning (Perry, 2002). Without the vitally important relational input from caring, attuned caregivers, children may develop as if the entire world were a cold, dangerous place. Not surprising, many studies have found that maltreated infants exhibit disturbed or insecure attachment (Carlson, Cichetti, Barnett, & Braunwald, 1989; Crittenden, 1985; Lamb, Gaensbauer, Malkin, & Schultz, 1985; Schneider-Rosen, Braunwald, Carlson, & Cichetti, 1985). Children who have experienced abuse and neglect in infancy and early childhood are at greater risk for developing maladaptive behaviors and mental health problems as they get older.

### **CASE 1: CAREGIVER ISSUES IMPACTING BONDING AND ATTACHMENT**

Mark, age 2, was brought to our clinic by his adoptive mother due to concerns that he may have an attachment disorder. He had been adopted at 10 months of age from a small Eastern European orphanage, where he had been placed at birth. His adoptive mother, Sarah, had no knowledge of Mark's biological parents but reported that the orphanage seemed "better than most," as Mark had relatively stable caregivers to whom he appeared attached and areas in which he could explore and play. She reported that her difficulties with Mark began almost immediately upon returning home. According to Sarah, he would not look her in the eyes, didn't enjoy being held, and didn't engage in exploratory play. In an effort to strengthen the attachment bond, she had taken Mark to multiple therapists specializing in attachment. Further, she had been trained in holding therapy and had read countless books on the subject.

In an effort to get to know Sarah and Mark better, clinicians observed their interaction over the course of the first two interview sessions. During the initial interview Sarah sat and talked with the lead clinician while Mark explored the room. Mark quickly discovered that he could climb from the chair to the desk, and within minutes he was happily walking on top of the desk and onto the adjoining table. The observing clinicians watched in dismay as Sarah continued the interview with no acknowledgment of her son's precarious situation. Only

when the suggestion was made that Mark might fall and injure himself did she remove him from the table.

During the second interview, Sarah offered to demonstrate the activities she was currently implementing to increase her son's attachment to her. She picked Mark up and held him tightly in her arms, her hand under his chin, in an effort to force him to look directly into her face. The child squirmed and fought to get loose; eyes closed, he turned his head violently in an effort to avoid her gaze. The more he fought and screamed the more resolute she became. Finally, she looked at the clinician and said, "See, this is exactly what I've been dealing with." However, to the clinician, Mark's reaction was not a surprise. When infants or young children are distressed due to pain, pervasive threat, or a chaotic environment, they will have difficulty participating in even a supportive caregiving relationship (Perry & Pollard, 1998)—which this obviously was not.

A second clinician participated in the third session with the family. While the primary clinician talked with Sarah about healthy development, the second clinician sat on the floor with Mark, who was playing with a large plastic dinosaur. The second clinician engaged in parallel play with another dinosaur. Within a short time, Mark had moved close to the clinician, interjecting his dinosaur into her play. He interacted easily with the clinician, making appropriate eye contact and happily describing the dinosaur's activity. In subsequent sessions it became clear that the issue was not centered in the child but in the parenting behavior. Sarah had experienced abuse at the hands of her own mother as a child. Relationships, it seemed, had been difficult for her throughout her adult life, but her hope was that by adopting a child she would fill this relational void. Unfortunately, it is not uncommon that caregivers who themselves experienced trauma or maltreatment as children carry these experiences into their own maternal-child relationships. The frightened or frightening behaviors of such a caregiver often creates a contradiction that is impossible for the child to resolve: The caregiver is both the source of, and solution to, the child's distress (Main & Hess, 1990). Without an acknowledgment of the impact that their own childhood experiences have on their parenting, these caregivers are unlikely to change their behavior. This was the case with Sarah. Attempts to help her better understand how her own trauma history impacted her ability to respond to her son's needs and to teach her appropriate nurturing activities ultimately were unsuccessful, leading ultimately to her decision to relinquish her parental rights. Mark was later adopted by



another family who was more open to understanding the impact of his early experiences and to providing the necessary reparative experiences that would allow him to grow into a healthy happy child.

## **CASE 2: THE DEVASTATING IMPACT OF MALTREATMENT ON SOCIAL-EMOTIONAL DEVELOPMENT**

Sydney never knew her biological parents. She had been removed from their care at birth due to the severe physical abuse of her three older siblings by her mother and father. Sydney was fortunate. She was placed in a loving home with foster/adoptive parents who cared for her as if she were their own child. Sydney thrived in the care of these nurturing, attentive, and attuned caregivers. In her mind, they were her mommy and daddy, and that's what she called them. Tim and Jan thought of Sydney as their child even though they had been reminded, time and time again by her caseworker, that there was no guarantee that they would be able to adopt her. Despite torturing their older children, the parental rights of Sydney's parents had not been terminated. The Child Protective Services (CPS) caseworker was concerned about the ethnic differences between the foster parents and Sydney, although that difference was only noticeable to those who didn't know them. They were a very happy family.

Then when Sydney was 3 years old the judge made a surprising decision. Her biological parents had completed all of the requirements placed upon them by CPS, including parenting classes, anger management classes, and domestic violence and drug and alcohol counseling. It now seemed that after several years they had finally gotten their act together and were once again ready to parent their four children. Sydney did know her brothers and sister; they had monthly visits during their time in foster care, although the infrequency of the time together did little to forge a sibling bond. Her parents, on the other hand, had rarely made the parental visits. However, this made little difference as the judge handed down his decision. They were her biological parents and that's what mattered. Tim and Jan hired an attorney, and they fought Sydney's removal from their home with all they had—but biology won out. On a crisp February morning, Sydney was taken from them. Jan later described how Sydney's screams haunted her day and night.

But that was just the beginning of the trauma for Sydney. She had been taken from her mommy and daddy and given to two people whom

she didn't know. They said that they were her "real" mommy and daddy, but she knew that wasn't true, so she called them by their names. That was only one of the things that infuriated them about her. Within a short period of time, the torture began: beatings, burning with cigarettes, being locked in her room, and denied food. Sydney's world had completely changed and her 3-year-old mind couldn't begin to understand why.

Thankfully, Tim and Jan never gave up. They were not able to see Sydney but, based upon the reports when her siblings initially came into care, they could only imagine what she was going through. They continued to fight. They told Sydney's story to the media and sought the help of children's rights groups. But ultimately it was a neighbor who put an end to Sydney's suffering. She had seen Sydney only on rare occasions over the year and a half that the children had been back in the home. The older children went to school and played in the neighborhood park, but not Sydney. One day she witnessed the father kicking Sydney as she tried to walk out onto the front porch. The neighbor immediately called the police. When they arrived with CPS there was little doubt of the abuse suffered by this child. She was rushed to the hospital. Both parents were arrested, and her brothers and sister were once again placed in foster care.

When Jan and Tim entered the hospital room, they barely recognized their little girl. Her once beautiful hair was now matted to her head and was completely gone in some places. Her eyes, once so sparkling and full of life, stared right through them. She didn't speak. Ultimately the results of days of tests and X-rays told the horrible truth. Sydney had suffered countless beatings that ended in broken bones that were never treated. She would have to endure multiple surgeries to chip away the calcium deposits that had formed on the healed bones in her legs. She had regressed in every developmental domain, and she exhibited severe PTSD.

It wasn't until she returned home that the healing could begin. Her room was just as she left it—the consistent, nurturing, and safe home was waiting for her. She would need hours of physical and occupational therapy and the efforts of therapists experienced in working with traumatized children. Most important, she needed the love and care of her family to provide the patterned, repetitive, and reparative experiences that would help build the developmental capacities that anger and cruelty had stolen from her. Ultimately Sydney did heal from all this early trauma because of her strong spirit and the parents who never gave up on her.

### **CASE 3: NEGLECT IN INFANCY AND THE DEVELOPMENTAL CONSEQUENCES**

Haley was adopted from an orphanage outside of the United States when she was 9 months old. While the information her adoptive parents had about her past was minimal, they did know that she had spent the first 2 months of her life with her biological mother, who was a known alcoholic. At the time she was placed, Haley had a serious illness and several bruises on her legs, and she spent at least a month in the hospital. Haley's adoptive parents had an opportunity to tour the facility, which they described as a "typical" orphanage—a cold place with large rooms filled with rows of cribs or beds and only a few caregivers.

Upon returning home with their new baby, the parents were surprised by her behavior. She cried very little during the day; she would often just sit and stare into space. At night, however, she would wake several times screaming uncontrollably. No matter what they tried, they were rarely able to comfort or soothe her when she was upset. She didn't like to be touched or held, and her eating was always rushed, as if she hadn't eaten in days and didn't know when she would eat again. Haley would often hurt herself by banging her head or pulling her hair until it came out, and she would also try to hit or bite anyone who tried to hold her.

Haley's adoptive parents, Kristy and Sam, worked to make home a safe place. Kristy quit her job to stay home with her daughter. They hired a psychologist to come into their home and teach them appropriate attachment techniques such as cuddling, gentle holding, and rocking. They worked very hard to build routines and predictability into Haley's day. Over time, Haley's self-injurious behaviors began to diminish, although they did not completely go away. However, following an outing to visit family out of state, Haley's behaviors regressed significantly. Once again she was rageful, hitting everyone within reach, touch averse, and exhibiting severe sleep disturbances. Only through limiting her exposure to those outside of the family and not venturing outside the home did her behaviors get better.

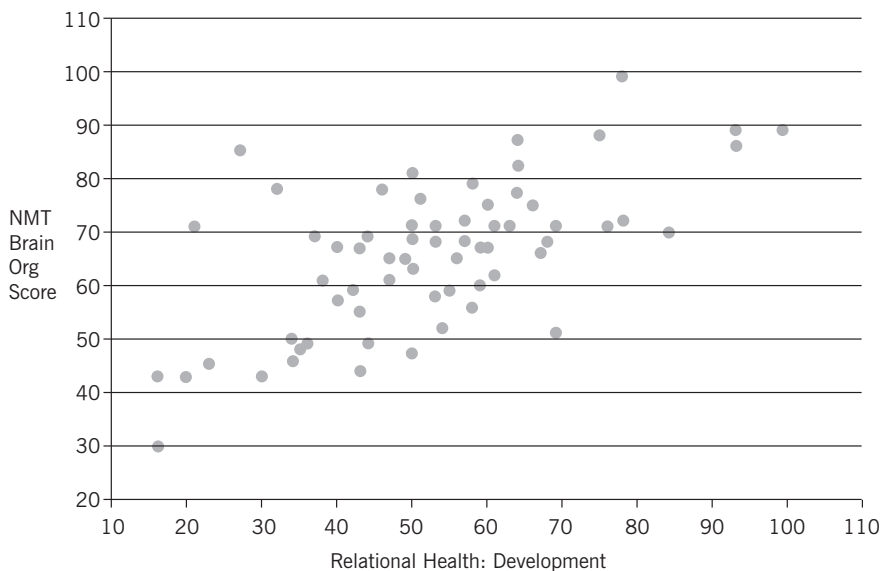
Haley seemed to be making progress. A massage therapist had worked with the family and now both parents used massage as a way to help soothe and calm their daughter. They built rocking and music and movement into their daily routine. They followed every recommendation to the letter—they were doing everything right. But without warning, Haley's behaviors began to escalate into severe mood swings. Her

parents describe her as exceptionally gentle and loving one minute and defiant, rageful, rejecting, and hurtful the next. Despite all of the empathy, patience, and nurturing, Haley did not seem to be getting better. What Sam and Kristy didn't know was that the absence of critical organizing experiences during Haley's neglectful first 8 months was a major contributing factor to the devastating developmental problems they witnessed on a daily basis.

## THE POWER OF RELATIONSHIPS TO HEAL

Understanding the power of traumatic events to shape the brain helps us to better determine what a child needs to heal. Although negative early life relational experiences have the ability to shape the child's developing brain, relationships can also be protective and reparative (see Figure 3.1). The cases of Mark and Sydney are examples of the power of relationships both to injure and to heal. There exists a wide body of research suggesting that social connectedness is a protective factor against many forms of child maltreatment—including physical abuse, neglect, nonorganic failure to thrive—as well as a means of promoting prosocial behavior (Belsky, Jaffee, Sligo, Woodward, & Silva, 2005; Caliso & Milner, 1992; Egeland, Jacobvitz, & Sroufe, 1988; Rak & Patterson, 1996; Travis & Combs-Orme, 2007; Chan, 1994; Coohy, 1996; Guadin, Polansky, Kilpatrick, & Shilton, 1993; Hashima & Amato, 1994; Pascoe & Earp, 1984; Altemeier, O'Connor, Sherrod, & Vietze, 1985; Benoit, Zeanah, & Barton, 1989; Crnic, Greenberg, Robinson, & Ragozin, 1984; Gorman, Leifer, & Grossman, 1993). Sydney's early experiences had taught her that home was a place where she was safe and loved. Her foster/adoptive parents and their extended family supplied her with the emotional connections, healthy interactions, and nurturing that provided a strong basis for surviving the horrors of life with her biological parents. We can only infer that Mark had something similar built in by his first caregivers in the orphanage that helped buffer the experiences with his first adoptive mother.

Haley, unfortunately, missed out on the nurturing, touch, and love that she needed in order to grow into a healthy, secure little girl. Her brain, literally, was a reflection of the severity of her neglect, likely combined with some type of physical maltreatment. Her stress response system overly active, Haley spent most of her time either hyperaroused or dissociating when her little system could take no more. Also, not surpris-



**FIGURE 3.1.** Relational health during development is protective. This graph is from research with a group of maltreated children. A retrospective measure of the presence, quality, and number of relational supports during each child’s development was obtained as part of a clinical assessment (Relational Health: Development) using an approach called the Neurosequential Model of Therapeutics (NMT; Perry, 2009). This is plotted against a measure of the development and functional capabilities of 28 brain-mediated functions (NMT Brain Organization [org] Score). A clear relationship between the relational health scores and overall quality of brain organization and functioning is seen.

ingly, the strategies that helped her survive in the environment of the orphanage made it more difficult for her to “take advantage of good-quality, loving and responsive” caregiving in her new home (Howe & Fearnley, 2003, p. 372). Experience in her earliest caregiving relationships had taught her that adults were frightening, hurtful, unpredictable, and confusing. Children with early neglect histories and subsequent attachment-related problems rarely feel safe when placed in new, healthy caregiving situations. Instead, they work to avoid close relationships, often becoming aggressive and controlling as a way to protect themselves from further hurt. Howe and Fearnley (2003) aptly describe the situation this way.

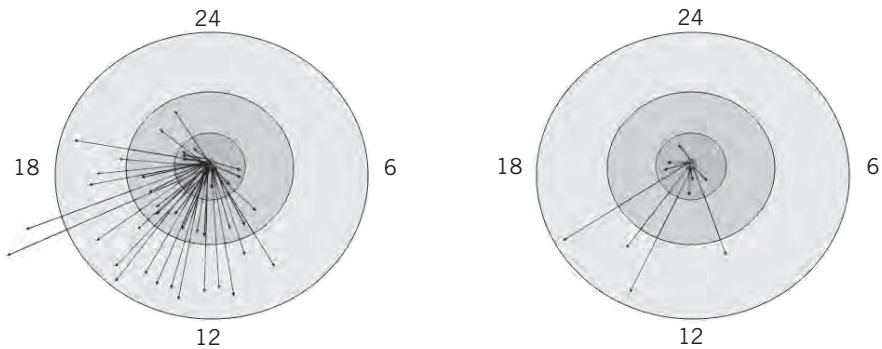
Close relationships are the one thing these children avoid. Their developmental agenda is to control and not to engage people. This denies them exposure to the very experiences they need. So long as they remain unable to relinquish control and relate fully and accurately with their carers and therapists, the children make little emotional or developmental progress (p. 380).

Sydney's case, in particular, provides an example of how healthy caregiving and strong attachments can help protect children from the lasting impact of traumatic events. That is not to say that all of the scars disappear or that the memories of trauma no longer exist, only that the reestablishment of predictable routines, reconnections with attentive, attuned, committed caregivers, and solid therapeutic treatment provide the opportunity for children to heal.

## **PRACTICE AND POLICY IMPLICATIONS**

Our current mental health, child welfare, and judicial systems, as well as child-placing agencies deal with traumatized and maltreated children as if they were completely unaware of these essential findings in development, attachment, and trauma. We have few metrics to measure the number, quality, and patterns of healthy (or unhealthy) relational interactions; we move traumatized children from therapist to therapist, school to school, foster home to foster home, community to community. Indeed our systems often exacerbate or even replicate the relational impermanence and trauma of the child's life (see Figure 3.2). We expect "therapy"—healing—to take place in the child via episodic, shallow relational interactions with highly educated but poorly nurturing strangers. We undervalue the powerful therapeutic impact of caring teacher, coach, neighbor, grandparent, and a host of other potential "cotherapists."

Future effective therapeutic interventions—both preventive and healing—must be developmentally informed and trauma sensitive. There is much to learn, yet we know enough now to begin to evaluate and modify our current therapeutic practices, programs, and policies to take full advantage of the biological gift of the healing power of relationships.



**FIGURE 3.2.** Positive relational interactions: Typical and foster child. These two figures are representative 24-hour relational contact maps examining the number of positive relational interactions in two children. Arrows represent positive interactions (as rated by observer and child); arrows ending in the inner circle represent interactions with family; additional circles represent friends, then classmates/acquaintances. Arrows outside the circle represent interactions with strangers. The figure on the right is based on a 10-year-old boy in foster care who was moved in the middle of the school year to a new foster home away from extended family and community. This figure is the best 24-hour map for a 2-week period for this child. Several days were completely devoid of any positive relational interaction. The relational poverty played a major role in this child's inability to progress; symptoms related to trauma and neglect persisted and increased while he was in relationally impoverished settings. Once in a stable placement with positive relationships created in school and the community, he stabilized and improved.

## REFERENCES

- Ainsworth, M., Blehar, M., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the Strange Situation*. Hillsdale, NJ: Erlbaum.
- Altemeier, W., O'Connor, S. M., Sherrod, K. B., & Vietze, P. M. (1985). Prospective study of antecedents for nonorganic failure to thrive. *Journal of Pediatrics*, *106*, 360–365.
- Anda, R. F., Felitti, R. F., Walker, J., Whitfield, C., Bremner, D. J., Perry, B. D., et al. (2006). The enduring effects of childhood abuse and related experiences: A convergence of evidence from neurobiology and epidemiology. *European Archives of Psychiatric and Clinical Neuroscience*, *256*(3), 174–186.
- Belsky, J., Jaffee, S. R., Sligo, J., Woodward, L., & Silva, P. A. (2005). Intergenerational transmission of warm-sensitive-stimulating parenting: A prospective study of mothers and fathers of 3 year olds. *Child Development*, *76*, 384–396.

- Benoit, D., Zeanah, C. H., & Barton, M. (1989). Maternal attachment disturbances and failure to thrive. *Infant Mental Health Journal, 10*, 185–202.
- Berenson, A., Weiman, C., & McCombs, S. (2001). Exposure to violence and associated health-risk behaviors among adolescent girls. *Archives of Pediatric Adolescent Medicine, 155*, 1238–1242.
- Bowlby, J. (1969). *Attachment and loss: Vol. 1. Attachment*. New York: Basic Books.
- Bremner, J. D., & Vermetten, E. (2001). Stress and development: Behavioral and biological consequences. *Development and Psychopathology, 13*, 473–489.
- Caliso, J. A., & Milner, J. S. (1992). Childhood history of abuse and child abuse screening. *Child Abuse and Neglect, 16*, 647–659.
- Carlson, V., Cichetti, D., Barnett, D., & Braunwald, K. (1989). Disorganized/disoriented attachment relationships in maltreated infants. *Developmental Psychology, 25*, 525–531.
- Chan, Y. (1994). Parenting stress and social support of mothers who physically abuse their children in Hong Kong. *Child Abuse and Neglect, 18*, 261–269.
- Chiao, J. Y., Iidaka, T., Gordon, H. L., Nogawa, J., Bar, M., Aminoff, E., et al. (2008). Cultural specificity in amygdala response to fear faces. *Journal of Cognitive Neuroscience, 20*(12), 2167–2174.
- Cooley, C. (1996). Child maltreatment: Testing the social isolation hypothesis. *Child Abuse and Neglect, 20*, 241–251.
- Crittenden, P. M. (1985). Maltreated infants: Vulnerability and resilience. *Journal of Child Psychology and Psychiatry, 26*, 85–96.
- Crnic, K., Greenberg, N., Robinson, N., & Ragozin, A. (1984). Maternal stress and social supports: Effects on the mother–infant relationship from birth to eighteen months. *American Journal of Orthopsychiatry, 52*, 550–557.
- Egeland, B., Jacobvitz, D., & Sroufe, L. A. (1988). Breaking the cycle of abuse. *Child Development, 59*, 1080–1088.
- Emde, R. N. (1998). Early emotional development: New modes of thinking for research and intervention. *Pediatrics, 102*(5) Supplement, 1236–1243.
- Fitzpatrick, K. M., & Boldizar, J. P. (1993). The prevalence and consequences of exposure to violence among African American youth. *Journal of the American Academy of Child and Adolescent Psychiatry, 32*(2), 424–430.
- Gaudin, J., Polansky, N., Kilpatrick, N., & Shilton, P. (1993). Loneliness, depression, stress, and social support in neglectful homes. *American Journal of Orthopsychiatry, 63*, 597–605.
- Gorman, J., Leifer, M., & Grossman, G. (1993). Nonorganic failure to thrive: Maternal history and current maternal functioning. *Journal of Clinical Child Psychology, 22*(3), 327–337.
- Graham-Berman, S. A., & Levendosky, A. A. (1998). Traumatic stress symptoms in children of battered women. *Journal of Interpersonal Violence, 13*(1), 111–128.
- Greenspan, S. I., & Wieder, S. (2006). *Infant and early childhood mental health: A comprehensive developmental approach to assessment and intervention*. Washington, DC: American Psychiatric Association.



- Hashima, P., & Amato, P. (1994). Poverty, social support, and parental behavior. *Child Development, 65*, 394–403.
- Howe, D., & Fearnley, S. (2003). Disorders of attachment in adopted and fostered children: Recognition and treatment. *Clinical Child Psychology and Psychiatry, 8*(3), 369–387.
- Lamb, M.E., Gaensbauer, T.J., Malkin, C. M., & Schultz, L. A. (1985) The effects of child maltreatment on security of infant–adult attachment. *Infant Behavior and Development, 8*, 35–45.
- Lyon-Ruth, K., & Spielman, E. (2004). Disorganized infant attachment strategies and helpless-fearful profiles of parenting: Integrating attachment research with clinical intervention. *Infant Mental Health Journal, 25*(4), 318–335.
- Main, M., & Hesse, E. (1990). Parents' unresolved traumatic experiences are related to infant disorganized attachment status: Is frightened and/or frightening parental behavior the linking mechanism? In M. Greenberg, D. Cicchetti, & E. Cummings (Eds.), *Attachment in the preschool years: Theory, research, and intervention* (pp. 161–182). Chicago: University of Chicago Press.
- Malinosky-Rummell, R., & Hansen, D. J. (1993). Long-term consequences of childhood physical abuse. *Psychological Bulletin, 114*(1), 68–79.
- Margolin, G., & Gordis, E. B. (2000). The effect of family and community violence on children. *Annual Review of Psychology, 51*, 445–479.
- Pascoe, J., & Earp, J. (1984). The effect of mothers' social support and life changes on the stimulation of their children in their home. *American Journal of Public Health, 74*, 358–360.
- Perry, B. D. (2001). The neuroarcheology of childhood maltreatment: The neurodevelopmental costs of adverse childhood events. In K. Franey, R. Geffner, & R. Falconer (Eds.), *The cost of maltreatment: Who pays? We all do* (pp. 15–37). Binghamton, NY: Haworth Press.
- Perry, B. D. (2002). Childhood experience and the expression of genetic potential: What childhood neglect tells us about nature and nurture. *Brain and Mind, 3*, 79–100.
- Perry, B. D. (2008). Child maltreatment: The role of abuse and neglect in developmental psychopathology. In T. P. Beauchaine & S. P. Hinshaw (Eds.), *Textbook of child and adolescent psychopathology* (pp. 93–128). New York: Wiley.
- Perry, B. D. (2009) Examining child maltreatment through a neurodevelopmental lens: Clinical application of the neurosequential model of therapeutics. *Journal of Loss and Trauma, 14*, 240–255.
- Perry, B. D., & Hambrick, E. P. (2008). The neurosequential model of therapeutics. *Reclaiming Children and Youth, 17*, 38–43.
- Perry, B. D., & Pollard, R. (1998). Homeostasis, stress, trauma, and adaptation: A neurodevelopmental view of childhood trauma. *Child and Adolescent Psychiatric Clinics of North America, 7*, 33–51.

- Perry, B. D., & Szalavitz, M. (2007). *The boy who was raised as a dog; and other stories from a child psychiatrist's notebook: What traumatized children can teach us about life, loss and healing*. New York: Basic Books.
- Rak, C. F., & Patterson, L. E. (1996). Promoting resilience in at-risk children. *Journal of Counseling and Development, 74*, 368–373.
- Read, J., Perry, B. D., Moskowitz, A., & Connolly, J. (2001). The contribution of early traumatic events to schizophrenia in some patients: A traumagenic neurodevelopmental model. *Psychiatry, 64*, 319–345.
- Sanders-Phillips, K. (1997). Assaultive violence in the community: Psychological responses of adolescent victims and their parents. *Journal of Adolescent Health, 21*(6), 356–365.
- Schneider-Rosen, K., Braunwald, K. G., Carlson, V., & Cicchetti, D. (1985). Current perspectives in attachment theory: Illustration from the study of maltreated infants. *Monographs of the Society for Research in Child Development, 50*(1–2, Serial No. 209), pp. 194–210.
- Thompson, R. A. (2002). The roots of school readiness in social and emotional development. In Kaufman Early Education Exchange, *Set for success: Building a strong foundation for school readiness based on the social–emotional development of young children*. (pp. 8–29). Kansas City: Ewing Marion Kaufman Foundation.
- Travis, W. J., & Combs-Orme, T. (2007). Resilient parenting: Overcoming poor parental bonding. *Social Work Research, 31*(3), 135–149.