Adopting and Fostering Children from Hard Places

Fact Sheet: Neurochemistry and Brain Development

As a direct result of early trauma and deprivation, children who were adopted or those in foster care—especially those with a history of neglect or abuse—often have suboptimal brain chemistry. This can remain true even after a child has lived in an adoptive home for many years. Because their brains are different from those of other children, these kids react to stimuli differently and exhibit different patterns of behavior. Healing comes from deep, intuitive insight into the child's painful past and wise application of compassionate parenting techniques tailored to fit the child's unique personality and special needs.

Origins: The Neurochemistry of Fear. We know that many things happen in the mental, emotional, and neurological development of children who have been subjected to harm during the earliest phases of life. Dramatic alterations in their basic brain chemistry affect the reactivity of their stress system, the way they think, the way they trust, and the way they connect with other people. This is not just a "software" problem—it's a matter of "hardwiring" in the central nervous system.

How Trauma and Fear Change the Brain. Early interpersonal contacts have a profound impact upon the brain. As a nursing child snuggles close to her mother's breast, looks up into her mother's eyes, and sees her own expression mirrored in her mother's face, her brain envelops these sensory images in a network of positive neurochemical links. But if these warm and comforting experiences are lacking, or if a child's interactions with a primary caregiver are frightening or traumatic, development of the "primitive brain" follows a very different path:

- When life is lived in a state of heightened fear and constant emergency, the brain reorganizes itself around the need for self-protection. Survival functions—"fight, flight, fright, or freeze"—take center stage. The individual becomes *hypervigilant*, continually on the lookout for danger and threats. High stress reactivity inhibits brain functions that are not absolutely essential for escape or survival, such as language development and the ability to process sensations. Sometimes this can lead to *pain agnosia*, or the inability to perceive and react to pain.

- Chronically elevated levels of stress-related hormones, such as cortisol, can cause significant damage to the limbic system (including the hippocampus and amygdala, which control verbal and emotional memories), producing symptoms similar to those connected with Post Traumatic Stress Disorder. The normal diurnal cortisol cycle is disrupted. Reduced integration between the right and left hemispheres and a smaller corpus callosum (the bundle of nerves connecting the two sides of the brain) appears to have the effect of inhibiting development of the

left hemisphere. This asymmetry of brain function can lead to a number of undiagnosed learning disorders.

- High levels of stress hormones can also bring about a dangerous imbalance between excitatory and inhibitory neurotransmitters. Levels of dopamine, glutamate, and phenylethylamine (PEA)—the three brain chemicals most commonly associated with mental illness—are raised, while serotonin, a substance associated with the regulation of fear and agitation, is reduced. In some cases, alteration of GABA receptors (gamma aminobutyric acid), the brain's primary inhibitory neurotransmitter, may trigger seizures similar to those associated with temporal lobe epilepsy, including *tonic* (tensing of muscles), *clonic* (convulsions) and *absence* ("check in, check out") seizures.

Diagnosis: Detecting the Warning Signs. It is important to ask yourself whether your child may or may not be suffering from the effects of altered brain chemistry. On the surface, this condition can easily be mistaken for other problems, such as mild autism or bipolar disorder. Children of abuse and trauma are essentially *disconnected* children. Though their behavior seems to belie their basic need, they desperately want to be attached to someone at a deep and meaningful level; as a matter of fact, some of the most violent among them can also be the most tender-hearted. Unfortunately, the neurochemistry of fear gets in their way. For these reasons, it's imperative that parents become skillful detectives and learn to discern the signs of early childhood trauma through careful observation. Here are some practical strategies to keep in mind:

- *Know the risk factors.* First, familiarize yourself with your child's history. If you have a handle on his past, you'll be in a much better position to determine whether his problems are rooted in fear-related neurochemical imbalances. There are six major risk factors to be aware of:
    1. Stressful pregnancy
    2. Difficult birth
    3. Early hospitalization
    4. Abuse
    5. Neglect
    6. Trauma

- *Look for tell-tale signs.* When parenting a child from an abusive background, it's imperative to realize that "misbehavior" often conceals a subtle cry for help. It's possible that many of the aggravating things your child does can be best understood as survival tactics. In particular, be on the lookout for any of the following:
    1. *Dissociative behavior.* The child pulls away from contact with other people, seems hypervigilant, overly reactive, and overly sensitive to touch, sound, and visual stimuli.
    2. *Emotional instability and neurochemical fragility.* The smallest thing can "set him off" and cause a "meltdown."

3. *Inhibition of language.* The child is below his expected age or grade level in terms of speech development.
4. *Fight, flight, fright, or freeze.* The child displays instantaneous fear-related reactions to external stimuli.
5. *Poor self-image and bleak outlook.* The child's perspective on life, himself, and other people shows signs of deeply embedded negative belief structures.

Addressing the Issue. Here, as in almost every area of parenting kids from hard places, the *bad news* and the *good news* are the same: the human brain is *plastic*, and as a result it can always reorganize itself, whether to deal with danger and trauma or to adapt to a new environment of safety and trust. Early abuse doesn't amount to a life sentence for *any* child. It's never too late for kids to become *connected* in a healthy way. When we understand the neurochemistry of fear, we can begin working to counteract its effects and bring about a neurochemistry of healing. It just takes diligence, determination, and hard work on the part of the parent who wants to see it happen. The key is to deflect attention away from the "problem" and start thinking in terms of ways to reverse it. Here are some thoughts and suggestions to get you moving in the right direction:

- First, understand the importance of taking a *holistic* approach. Fear and its neurochemical effects can be defused through re-afferent learning, but the process must take the whole child into account and move forward by way of a complete restructuring of his environment. In particular, it should be based on a *developmental model*. A well-known axiom in the field of child development maintains that "recovery of function recapitulates development of function." In other words, we can help heal the damage done during a child's early years by starting over at the beginning and "re-doing" the developmental process through an affirming, safe, secure, and loving environment. Even under ideal circumstances, the human brain requires three years of mentoring to begin to develop normally. Parents of disconnected kids should expect to invest a comparable amount of time in the task of bringing their at-risk children back "online."

- Tools to help change the brain chemistry of fear—at home:
  1. *Felt safety*. It's not enough to create a safe environment for your child. In addition to being safe, he needs to *know* and *feel* that he's safe. Find ways to communicate this to him so that he in turn can verbalize it back to you.
  2. *Voice.* Give your child a voice. Make it clear to her that her concerns are heard and acknowledged. Work out compromises so that she is able to get what she wants at least *some* of the time. Find ways to say *yes* instead of *no*. Allow her to tell her own story—don't tell it for her. Come up with creative ways to help her express her feelings. For example, you can facilitate her narrative skills by

encouraging her to draw pictures representing her personal history or to act it out in puppet play.

3. *Touch.* Use touch, proximity, and eye contact to draw your child out and open a doorway into his heart. A gentle hand on the shoulder or a finger under the chin is enough. But don't touch without first getting the child's permission—otherwise you may inadvertently set off a "fight, flight, or freeze" response. Respect his personal space and teach him to respect yours in return.
4. *Exercise.* Appropriate physical activity at regular intervals throughout the day can help regulate serotonin and cortisol levels and keep your child on a more even emotional keel.
5. *Playful engagement.* Have fun and laugh together. Turn bedtime and mealtime routines into games. Create "rituals of attachment" by using simple little verbal exchanges such as, "Okay?" "Okay;" "Fair enough?" "Fair enough;" "See you later, Alligator." "After 'while, Crocodile." Let your smile and the soothing tone of your voice communicate your love. This kind of playful interaction and light-hearted repartee is what Dr. Karyn Purvis calls "the Attachment Dance." Like any dance, it's more an art than a science, and it won't work unless you enter into it in an atmosphere of disarming freedom and fun.
6. *Novel situations.* Change and transition are often difficult for children who come from a background of complex trauma. Be aware of this tendency and look for gentle and disarming ways to alter the routine and introduce your child to new experiences without setting off alarm bells inside his head.
7. *Food and dietary supplements.* It's possible that a nutritional approach that includes dietary plan or a regimen of appropriate supplements may help regulate your child's mental and emotional state. Hydration is important (try green teas), and it can be helpful to provide a nourishing snack every two hours or so to regulate blood sugar levels. But be careful not to "shotgun" supplements. Atrophied neurochemical receptors may be incapable of accommodating a sudden influx of serotonin (which, in some cases may actually be transformed into dopamine and lead to aberrant behavior). Remember that diet and drug therapies should at most account for only a very small portion of your treatment plan—perhaps 20 percent or less. The rest is a matter of behavioral intervention and personal interaction between parent and child.

- Tools to help change the brain chemistry of fear—at school:
    1. *Advocacy.* Become your child's advocate at school, at church, in the neighborhood, and wherever there are people who don't understand the behavioral impact of early trauma and the neurochemistry of fear. Help teachers, day-care workers, and other adult authorities

2. *Learning styles.* Be aware that children with fear-based behavioral issues do not always function best in standard classroom settings, which are usually set up to accommodate visual and auditory styles of learning. Due to their inhibited linguistic abilities, they may become especially frustrated with reading, writing, and other verbal activities. In such cases, a more hands-on, tactilely oriented, and movement-based approach to learning may provide them with the edge they need.
3. *Standing.* In connection with this last point, teachers should remember that neurochemically challenged children may find it difficult to sit for long periods. Allowing them to stand at their learning stations or to move about the classroom (within reasonable limits, of course) can do wonders for their attitude and their academic progress.
4. *Environment.* Loud noises, harsh fluorescent lighting, or strong smells can send neurochemically fragile kids into a meltdown. Work with teachers and school administrators to "tone down" the sensory aspects of the classroom environment. Carpeting, "cool" colors on the walls, soft background music, and warm, gentle local lighting can all help stabilize a tense and hypervigilant child.
5. *School snacks.* As at home, it's important in the classroom setting to make sure that at-risk children receive appropriate snacks at least every two hours to prevent problems associated with fluctuating blood sugar levels.

Finally, you may want to locate a trained Christian counselor who specializes in family attachment therapy. Choose a therapist who makes a point of working with *parent and child* together within the context of a *family systems* approach. Therapy sessions should only be a jumping-off point for the work you'll be doing with your child at home. In between visits with the counselor, partner with your child by helping him interpret and verbalize his past history and present experiences in meaningful words. Your family pediatrician may be able to recommend a suitable practitioner. If not, Focus on the Family's Counseling Department can provide referrals to qualified individuals practicing in your area—feel free to call us Monday through Friday between 6:00 a.m. and 8:00 p.m. Mountain time at 800-A-FAMILY (800-232-6459). You may also be able to find the resources you need by visiting the Web site of the TCU Institute of Child Development [www.child.tcu.edu].

Resources

Books

Karyn B. Purvis, Ph.D., David R. Cross, Ph.D., and Wendy Lyons Sunshine, *The Connected Child*. See especially Chapter 4, "Disarming the Fear Response with Felt Safety."

DVDs

Karyn Purvis, Ph. D., *Empowering, Connecting, and Correcting Principles* (TCU Institute of Child Development).

Karyn Purvis, Ph. D., *The Neurochemistry of Fear* (TCU Institute of Child Development)

Karyn Purvis,Ph. D., *A Sensory World* (TCU Institute of Child Development)

Karyn Purvis, Ph. D., *Playful Interaction* (TCU Institute of Child Development)