

## Neurofeedback: Training the Brain

Neurofeedback or EEG Biofeedback is training for the brain. In very simple terms, the brain wants to be in a state of synchronicity, a place in which it can regulate all aspects of the individual's functioning effectively.

Trauma interrupts this harmony, leaving the brain with dysregulation. Those of you familiar with deer know that they flee in an instant when frightened. Deer are hypervigilant—always wary of their environment. Traumatized children operate in a similar fashion. They are physiologically in a state of alarm, of “fight” or “flight,” even when there is no real external threat or demand. So, a stressor arises. Perhaps there is an argument with a peer or a demanding school task. The child escalates into a state of fear very quickly; a temper tantrum occurs, an argument ensues, an object gets thrown and so on. This type of dysregulation is known as hyperarousal. Parents, siblings or peers are left wondering, “What just happened?” “What set her off?”

A second type of dysregulation is dissociation. This involves withdrawing from the outside world and focusing on the inner world. A dissociative child may self-stimulate (i.e., rocking, chew on fingers, play with hands, etc.). Parents often describe the child who is dissociative as “appearing to be in a fog” or “acting like she just isn't there.” When an adult asks them to do something, they do not respond. If the adult becomes angry, the child becomes more anxious and moves further into dissociation.

Hyperarousal and dissociation occur because of the environment in which the child's brain developed—brain development is most rapid in utero and during the first four years of life. This means:

- Early experiences have disproportionate importance in relation to the manner in which the brain develops, and subsequently to the way in which the brain functions.
- The brain develops in a user-dependent way. The repetition of experiences strengthens the brain's pathways. Chronic stress sensitizes neural pathways and over-develops the regions of the brain involved in anxiety and fear. Children who experience the stress of physical or sexual abuse will focus their brains' resources on survival and responding to threats in their environment. Unfortunately, such children's brains continue to overreact even after placement in a healthy family.
- While chronic abuse and neglect can result in the overactivation of the stress response system, neglect can result in other problems. Neglect means that the child's physical and psychological needs go unmet. In order for the brain and thus, the child, to develop, he needs stimulation and acknowledgement. If these elements are not provided, the basic neural pathways that were ready to grow through experiences with care givers, wither and die:

If babies are ignored, if their care givers do not provide verbal interaction, language is delayed.

If a child does not receive kindness, he may not know how to show kindness.

If a child's cries go unheard, he may not know how to interact positively with others.

These capacities may not fully develop because the required neural pathways were not activated. Again, the brain is use-dependent. It needs repetition of experiences to develop the skills necessary for the individual to function. This additional information related to neglect is

especially important for the family adopting internationally. The ratio of care givers to babies and toddlers in institutional settings is often poor. Review of countless hours of orphanage video clearly demonstrates five or more infants with one care giver. This would be the same as a family having quintuplets! Although, in an institutionalized setting, a mother, mother-in-law, sisters, church members and neighbors aren't available to help out!

Overall, A child with a brain adapted for an environment of chaos, unpredictability, threat and distress is ill-suited to the modern classroom, playground or healthy family. When children experience repetitive threats, there is over-activation of the stress response system. Their brains are always in a higher state of activation, always ready to go into flight or fight.

[Neurofeedback](#) can help to reduce the impact of abuse and neglect on the brain. Electrodes are placed on the scalp. Brain activity is monitored on a computer screen. This provides constant feedback to the individual about his brain activity. This feedback is actually presented in the form of a video game—no hands required. The child uses—trains— his brain to play the video game. In turn, brain activity (i.e., hyperarousal or dissociation) is increased or decreased. The end result—new and improved brain function! This calmer state allows the traumatized child to access the parts of the brain that allow for more planful actions and reactions—there is greater ability to think in a more rational and logical manner.

Neurofeedback is proving useful to treat such conditions as Attention-Deficit/Hyperactivity Disorder, Reactive Attachment Disorder, Posttraumatic Stress Disorder, conduct problems, specific learning disabilities, and related issues such as sleep problems in children, teeth grinding, and chronic pain such as frequent headaches or stomach pain, or pediatric migraines. The training is also helpful with the control of mood disorders such as anxiety and depression, as well as for more severe conditions such as medically uncontrolled seizures, minor traumatic brain injury, or cerebral palsy.

With successful Neurofeedback medications may no longer be needed, or they may be needed at lower dosages, as the brain takes over more of the role of regulating itself.

Typically, mental health professionals receive neurofeedback training and offer this as a service. To locate a provider near you visit [EEG Spectrum](#).