

## **Impacting the Brain of the Traumatized Child**

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There is now sufficient information available from research on brain development and brain functioning, as well as the effects of trauma, to know that impacting the brain is the key to success in helping traumatized children. We owe a debt of gratitude to technology and medical science for what we now understand in this area. We now have the information knowledge, but what is currently needed is to turn this knowledge into practical tools that parents can readily understand and use to help their children. In this pursuit there is little need for sophisticated medical equipment, complex treatment systems, and expensive trainings to put into practice how to impact the brain. We must start with a basic understanding of a few principles and then invest energy into interventions that are not as complicated as one would think, or as some would have you believe.

There is no question that the short and long-term effects of traumatic experience can be devastating and can have life-long negative consequences for those unlucky enough to be abused and traumatized, particularly during early childhood years. A simple definition of traumatic experience is any event that overrides the ability of the individual to cope with the situation. When our ability to internally cope with an event is exceeded, a cascade of events take place in the brain that nearly always has strong and predictable results.

Short-term consequences of a traumatic experience can include mental, emotional and behavioral problems. When faced with an event that the individual is unable to cope with, the brain goes into a survival pattern of “fight or flight” response. The themes of fight or flight carry over to emotional and behavioral reactions. Which direction the individual goes on this continuum can depend on factors such as age, gender, physical size, and what strategy the individual perceives will best produce survival. For example, more young children and more females tend to internalize their response by getting away or dissociating (getting away mentally). Older children and more males tend to externalize their response by fighting back. However, fighting back for a child facing insurmountable odds is seldom effective and infrequently implemented. Other short-term effects of trauma can include: emotional instability and a heightened need for support and comfort or a heightened state of fear.

As difficult as the short-term results of trauma can be, long-term problems are generally much worse, due to how long they continue and how pervasively they can affect every aspect of the child’s life. Long-term consequences of traumatic experience affect not only the emotions and behavior of the individual but alter the brain and its development in profound ways. Long-term effects of trauma can include the inability of the child to self-regulate both emotions and behavior. This impact can include heightened states of arousal, hyper-sensitivity to any situation that is a reminder of the traumatic event, and a significant barrier to trusting others. In turn these impacts can produce the following ongoing patterns: anger, violence, hyperactivity, difficulties in concentration, an inability or resistance to trust anyone, and a lack of empathy and selfish thought patterns. These results of trauma then produce social difficulties at home, at school and in the community, as well as serve to cut the child off from family, friends and any type of support system. When this process continues without disruption, the child starts down what can be a life-long road of isolation and a pattern of pushing away anyone who is capable of providing support and care. A support system is a key factor in healing from abuse and coping with the stresses of life. Without support the future can be very dark for the child. The above long-term

impacts of trauma make every period of life much more difficult starting with early childhood. As these individuals mature they do not seize life, but instead, life seizes them.

The understanding of brain development that is now available has also pointed out the tragic truth that the most devastating long-term problems from trauma are caused by chronic neglect. This reality is tragic because neglect is most often at the hands of the most important person in the child's world (his or her mother) and because neglect is the most frequent type of abuse. Neglect is nearly always a continuing pattern of substandard care rather than a one-time event. The chronic nature of neglect has significant detrimental impacts on the region of the brain that controls emotional stability. Each of these factors can produce an unfortunate dynamic of a personality that reacts continually and has a heightened state of fear and dread due to a lack of belief that basic needs will be recognized and met at every turn in life.

There is little mystery as to why the above short and long-term problems become engrained in the response patterns as well as in the very personality of the child. Because trauma overrides the ability of the child to cope, the brain understands such an event as a threat to survival. Survival threats are perceived by the brain as ultra-important events and the brain is designed to insure all such events are remembered regardless of how young the child is. In fact, the younger the child, the more indelible the memory of the traumatic event becomes. Because survival requires the child to learn quickly where threats exist, traumatic memory is stored in the middle of the brain in what is called the limbic system. Trauma memory is different than factual memory and is an automatic brain response that the individual may not even be aware is happening. The immediate brain responses are the short-term problems listed above. When these problems are not disrupted, the consequences become the long-term problems also described above.

There are many other reasons that the brain acutely remembers traumatic experiences, but most of these have to do with brain development. The regions of the brain that are the first complex areas to develop are also the regions that are most negatively affected by trauma. These regions (right frontal lobes) are responsible for functions such as forming attachments with primary care providers, and proximity seeking drives to help reduce stress. These areas are needed for self-regulation coping abilities. When a young child experiences trauma rather than stress reducing comfort and nurture, the brain's development is damaged with predictable results that are all too commonly observed in traumatized children—inability to handle stress, emotional problems, inability to relax, loss of the ability to play or be child-like, and the significant absence of empathy.

## **Understanding the Brain**

A brief overview of the human brain can be helpful in understanding how we can help children after traumatic experiences have occurred. The brain is the most complex organic structure in the known universe. The most sophisticated super computers pale in comparison to the complex structures and abilities of the human brain. The brain can be described as having four primary components. The brainstem is the most primitive section and one we share with most living organisms. The brainstem runs our moment-to-moment survival functions including respiration, temperature regulation, and circulation. Next in complexity is the section known as the diencephalon. This part of the brain regulates motor functions, arousal, and sleep patterns among others—functions that are somewhat more complex than those controlled by the

brainstem. The final two sections are the most complex parts of the brain known as the limbic system and the neocortex. The limbic system regulates attachment, sexuality, and plays a major role in emotions and trauma memory. It can be said that a traumatized child functions primarily from the limbic region of the brain, a section of the brain that is primarily reactive in nature. The neocortex is by far the most complex part of the brain and controls much of what we consider to be our reasoning and thought processes. These components include language, abstract and concrete thought, and the most advanced mental functions collectively referred to as executive functions—planning, goal setting, cause and effect understanding, moral reasoning, delaying gratification, sequential thought, and most of the mental functions that separate Homo sapiens from the rest of the animal kingdom.

From the above descriptions it can be quickly observed that traumatized children primarily use their reactive limbic system and do not properly use their higher reasoning centers in the neocortex. After trauma, children often have difficulties with stress management, they overreact frequently, they do not seem to learn from past experiences, and they come up short in nearly all areas of executive functioning. Therefore the brief way to state the solution to the problems created by trauma is to change the child's brain by teaching the child to learn how to regulate or control the limbic reactivity and learn to use the executive brain functions. Of course this is much easier said than done, but it is very doable.

### **Strategies to Alter the Child's Brain**

There are parts of the brain that we do not want to alter. All of the functions of the brainstem and nearly all functions of the diencephalon cannot be altered. We need these functions to keep us alive. The other two areas of the brain, the limbic and neocortical regions are a very different matter. These areas adapt to experiences and will be the target of interventions designed to help traumatized children, and adults traumatized at a young age.

The general goal of interventions that alter the limbic system of the brain is to help the child react less and consciously act more. There are many ways to help the child do this including some mentioned here. For the most part these methods are low tech and yet very effective:

- **Get on the same page with the child.** The challenge in this intervention is to have your neocortex connect with the child's limbic system. To the degree you are able, do what you can to let the child know you that you understand the struggle he or she has, and that you have a plan to help. Actually if this is successful, you have taken a huge step forward in bypassing the limbic region entirely and connecting with the child's higher reasoning centers. You can let the child know you understand by explaining to the child why it is so difficult to handle stress, but be sure to do this when the child is calm. You can develop a stress plan (explained later) that you outline and have the child explain back to you that can be implemented in times of reactivity and stress. How you do this communication depends on the relationship you have with your child but step one is to connect with the child and work to have both of you on the same page.
- **Help the child learn self-regulation.** The reactivity caused by trauma overrides the child's internal ability of the child to use self-control. The regulation of behavior and emotions do not come naturally after trauma and must be taught. Teach the child to identify feelings and use skills to modify these feelings. When the child experiences

strong negative emotions, help him or her to reduce the intensity of the feelings through relaxation methods. Before the child acts impulsively, help the child to think about what he or she is about to do.

- **Teach relaxation.** Perhaps the most important single step you can take to help a traumatized child is to teach relaxation. This skill involves the use of mental abilities to calm down, stop intrusive thoughts, take deep breaths, and dozens of other strategies that children can learn to help relax. With practice the child can become proficient at turning down the volume of internal stress.
- **Provide structure.** Predictable rules and daily order to life help everyone get through the day more smoothly. Structure for traumatized children provides an external order that eliminates the pressure of internal chaos and is comforting. It is important to ignore the child's protests to the contrary. Traumatized children often fight against the very help they need.
- **Communicate predictions.** An easy tool to use in helping children think is to tell them your prediction of what they will next feel and how you anticipate they will act in certain situations. For example you could say something like, "When it is bath time you probably won't be ready so I will give the first bath to your sister." This use of predictions has the common outcome of disrupting the habits of reactivity.
- **Develop a stress plan.** Depending upon the age of the child, a stress plan can be simple or complex. A stress plan begins with an acknowledgement (usually from the parent) that reactivity to stress is beginning to occur. Aspects of the above interventions that have shown some success can be built into the plan. The dilemma for the child is that it is normal for the limbic region to react, often in unproductive ways, so the child does not immediately recognize that reactivity is a problem. It may help to have a signal (a word, hand signal, or other sign) to institute the plan. It may also help to have a place to implement the steps in the plan, such as the child's room, a favorite chair or some other positive location (this is not a time out). If you and your child can catch the reactivity early and successfully implement the stress plan, the child can have a voice in when the plan is no longer needed. However, if the child is in full reactivity, the parent must determine when to extend the plan.

When the above limbic interventions work they automatically become interventions directed at the neocortex. This is because at the moment the child turns his or her awareness away from reacting and toward a conscious plan of action, the neocortex has now been engaged, which is the primary goal of all interventions to impact the brain of the traumatized child. At the point the child moves away from reacting to the situation the following interventions can promote even higher order brain functions.

- **Provide executive functions.** All interventions that encourage use of higher reasoning centers of the brain promote executive functions. It is essential to understand that initially the adult must provide higher order reasoning until the child internalizes the skill. One of the best ways to provide executive function thinking for the child is to think out loud so that he or she can hear how this works. Keep in mind that unless the child has moved beyond the reactivity phase, you will not be able to help the child think in this

way. Examples of assisting the child by thinking out loud might be: “If you let your brother have this turn then you can have the next one,” or “If you get along with your friend he will want to play with you more.”

- **Encourage thinking.** Basically anything that encourages the child to think is a good strategy. Having the child write something requires higher order reasoning. This can include drawing feelings, an activity which requires making choices of what to include and it involves planning.
- **Use your words.** When children are encouraged to verbalize thoughts and feelings they must use their neocortex to do this. Yes, even if they are arguing with you, they must think about the next thing they want to say to minimize or justify their behavior. First get them to talk to you and then work on less reactive communication.
- **Teach self-mastery skills.** Learning how to have some internal control over internal thoughts and feelings can be a powerful experience in self-understanding and self-control. Children can be taught to visualize calming images, train their brain on a thought or image. These exercises are the beginning of meditation and concentration skills. Physical activities such as yoga, breathing exercises, and even aerobic activities such as rapid walking or jogging can help the child experience self-mastery.
- **Use repetition.** Any helpful intervention to impact either the limbic system or neocortex must be repeated many times to be effective. It is the repetition that builds capacities within the brain by literally forming new neurological structures in the child’s brain that over time can replace negative habitual patterns where the child has become stuck.

The above strategies are only a few of many possible examples. Avoid the tendency to view altering the child’s brain as an overwhelming task that requires complicated steps beyond what you can do in your home. The truth is that interventions at home can be the most helpful and effective for the child. Pick one or two of the above interventions and stick with it through repetition. You can always add something new as the child improves in an area. The important thing is to know that these steps help, and to have at least a general understanding of why. This goal has been the purpose of this article.

If you want to know more about how the brain works and how to help it work even better after trauma, my book *Traumatic Experience and the Brain* can help you take the next step. Just remember that every traumatic experience has a negative influence on the brain but also remember that every successful experience of coping has a significant impact on the brain as well. The ideas and examples provided here are doable and they work with some of the most damaged children. Therefore I am confident that with practice these concepts and approaches can work with your child as well.