

## Trauma and Attachment Influences on the Brain

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There is an area of the brain called the limbic system. This is the emotional center of the brain that reacts when there are emotions such as fear or extreme anxiety, and sets off a cascade of responses in the body. One is the fight-or-flight response, with the adrenaline rush that makes the body ready to physically react - to flee or fight. It causes a hyper-alertness using all the senses to look for details representing danger and causes the release of cortisol into the body to make quick energy/ fuel available to the body. There are many other responses as well. Bessel van der Kolk, MD who has done significant research for the National Institute of Health calls these an activation response (AR). This AR then affects the rest of the brain, not all in effective ways other than helping one protect the self in the moment.

The area of the brain called the anterior cingulate gyrus is next affected in the cascade of responses. That area of the brain is responsible for cognitive flexibility. When the limbic system is activated van der Kolk talks about there being at least a couple of possible responses that show up on brain imaging. One is that this area is very stimulated so the person gets singularly focused/ stuck on the same thought or idea. Functionally that would be a good idea to help a person not get distracted from the survival task at hand. Like with 9-11 – people got singularly focused on fleeing the Trade Center site for fear of what more would happen there. Everyone was running away – from the building, across the bridges to leave Manhattan, leaving the city. Another possible response shown on brain imaging is that the brain is blank – frozen – like soldiers who are shell-shocked. Either response then affects the prefrontal cortex of the brain. This area of the brain is responsible for impulse control and the executive functions of the brain, such as the ability to understand and organize the facts, prioritize, develop a plan of action that takes into account the variables, and then can evaluate and make needed adjustments to the plan as determined by other areas of the brain. The prefrontal cortex gets hijacked in these situations and remains “offline” like a computer until the AR decreases. With ongoing activation or the inability to get this AR to diminish, van der Kolk says this area of the brain and basic good judgment can be potentially inaccessible, depending on the logic that is able to be accessed.

Van der Kolk has researched what helps to bring down the AR, and says doing this is very important. Until the AR diminishes, the person is going to be at risk for the prefrontal cortex being offline and the executive functions not being accessible. Other research on trauma has found that the AR can be treated using EMDR – that is one of the treatments that van der Kolk’s brain imaging has found effective. Van der Kolk found that talk-therapy only gets at the left side of the brain. EMDR gets at the right side of the brain, in particular at the part of the brain responsible for the activation in the limbic system. Part of EMDR is using bilateral stimulation of the brain with eye movement or other methods that appear to allow the brain to take in new information and get the brain “unstuck”. The research on EMDR is significant, some of the most

profound being with Vietnam vets who had decades of flashbacks and intrusive recollections. There was a significant improvement of symptoms with the individuals as a result of EMDR even after decades of other prior treatments being unsuccessful.

Van der Kolk talks about how attachment issues are key to helping the brain learn emotional regulation, again managing this activation of the limbic system. Attachment theory describes how the intricate dance that occurs when the primary caretaker in the early months of life responds to the cries/ needs of an infant. The caretaker matches the activation of the infant, responds to the need for comfort, food, or diaper change. As the caretaker's response calms down as they are doing the action, the infant mirrors that and the infant's arousal/activation also calms. This happens many times in even one day, and eventually the child who is responded to in this way starts to learn emotional regulation as a result of this dance. Healthy attachment may not occur as a result of neglect, inconsistency of caretaker responses, inconsistency of who the caretakers are, something impedes the child being able to take in the comfort, or trauma such as sudden loss or change or change of caretakers such as with adoption. This impaired attachment may result in the person having emotional dysregulation that causes the limbic system to stay in that activated place or be prone to being activated much more readily than the person who has adequate attachment.

The idea that attachment issues are behind psychiatric conditions is getting more attention in the psychiatric literature as attempts to treat attachment are being explored. Some believe attachment issues can never be repaired while others report success dealing with even older children, adolescents and adults. To take information in and to be able to learn something new, the activation needs to be at a low enough level – to be at an optimal level of not too much or too little activation to be able to learn. This healing of attachment happens best in relationship rather than on one's own, and can occur with experientially based interventions, not that different from how an infant initially learns these things. Holly van Gulden of the Adoptive Family Counseling Center in the Minneapolis/ St. Paul, MN is an expert on attachment who speaks and consults internationally on this subject, and reports success in helping to heal these attachment issues.

The brain is believed to be malleable and can learn with the right conditions. Adaptive Information Processing Theory, a tenant behind Francine Shapiro's development of EMDR promotes the idea that the brain can heal much like the body. For example, if the body gets a cut, the body mobilizes it's resources and heals the cut so one couldn't tell it had been there in the first place. However if there is a splinter or dirt in it, the body keeps mobilizing it's resources and the cut festers until the cut is cleaned or the splinter is removed. Then the cut can heal.

With the brain, when trauma occurs, the belief is the brain also mobilizes its resources and can heal so the trauma is a known occurrence yet does not interfere with the person's life. How the person makes meaning of what has occurred and the beliefs the person takes away from the trauma is typically the same for life – the trauma is either adaptively or maladaptively processed. There are "big T" traumas like rape, life threatening illnesses or events, automobile accidents, natural disasters, loss of a loved one or attachment figure, lack of attachment or

neglect, etc. that threaten the life or sense of integrity of the individual. There are “little t” traumas that also can be processed adaptively or maladaptively. For example, if someone is mean to a child, that child can go away from that adaptively processed event by thinking “I’m going to stay away from that kid in the future” or “I’m going to stay away from kids who treat me like that” or “I’m gonna get help from an adult because I don’t know how to deal with this”. Maladaptively processed beliefs might include “Nobody likes me” or “I don’t fit in/ belong” or “I don’t have any friends” or “I am not good enough”. That same child who has maladaptively processed beliefs will keep looking at the world through the same lens of beliefs about their self. They may be unable to take in new information, so that when they are the most popular kid in their school in high school, they can’t take that in and only hold to the maladaptively processed beliefs about themselves and their world. EMDR allows the brain to take in new information much like cleaning the cut, and allows the brain to heal by being able to adaptively reprocess the memory.

Again – the brain can heal from trauma. Many believe and have experienced the healing of attachment issues. When these heal, the brain calms into the normal activation range. Medication can help in the short-run to stop the activation and stabilize the emotional dysregulation, but medication does not heal the trauma or attachment or maladaptively processed beliefs. That typically requires therapy, however sometimes life-transforming experiences can also allow new learning to occur. Effective therapy typically requires the person to engage in an open, self-reflective and self-disclosing process. With that in place, great potential for healing does exist.