

## **Don't Get Trapped By Trauma: Part 3**

### **What's happening in our brain when we experience trauma?**

In Parts 1 and 2 of this series, we looked at the disconcerting or terrifying effect trauma can have on us, even years after the event. We outlined what we mean by trauma as an experience. In this part (Part 3) we'll look at the science behind trauma and why we can get "trapped" by it.

What's actually happening when we experience trauma is that the 'emotional computer' part of our brain whose job it is to make sense of our experience and maintain emotional equilibrium is in overload.

Here we need to look at what's known as the Adaptive Information Processing System (AIP). The AIP represents our brain's capacity to heal and restore emotional balance. It's the emotional equivalent to the body's biological capacity to heal itself utilising its immune system.

Our AIP is made up of two parts within the brain: one is the amygdala, the other the prefrontal cortex. Together they interact to make sense of our experiences and help us recover when we get knocked off balance by life events.

A bit more about the amygdala. This is the ancient reptilian part of the brain stem that we are born with. It performs basic functions to ensure our survival: a fight/flight/freeze response. It's not sophisticated: it doesn't 'think' very much, it just reacts.

The other part of the AIP within the brain, the prefrontal cortex, develops in childhood and particularly from adolescence onwards and it's not fully formed until we are in our mid 20's. This is the more sophisticated of the two parts of the AIP. It can think at a number of levels and achieve a degree of mastery in relation to what we choose to think about, how we think about it and when to do that thinking. It can help us to make sense of our experiences, look at things in perspective, get over upsetting or distressing events and store them in our brain as memories in the same way we do with less disturbing events. We can get them out to look at if we wish, but they don't come into our heads uninvited or in a way that overwhelms us.

For the most part our AIP works well and we aren't aware that this teamwork is even going on. It may take a few hours or a few days to 'get over' a disturbing event but eventually we can stand back from it, put it in perspective and get on with everyday living. The difficulty comes when something occurs, such as a trauma, which is simply too large, too difficult or too frequent for the two parts of the brain to work together to make sense of what's happened and process it. In these circumstances the teamwork can break down.

To understand what's happening to bring about that breakdown in teamwork it's useful to think of the amygdala as the 'smoke detector' in the brain and the prefrontal cortex as the 'fire investigator'.

In the event of a perceived threat the amygdala (smoke detector) will flash red warning lights and make a loud noise. If the event doesn't challenge the psyche's defences too strongly it can stay sufficiently 'open' to let in the more sophisticated 'thinking' prefrontal cortex (fire investigator) to look at the situation more calmly, think through what's happening, what's real or not real, what emotions might be being triggered, and decide what to do to restore some balance and emotional equilibrium.

In the event of a more severe perceived trauma, one that threatens the psyche's defences too much, the smoke detector goes into overdrive. It isn't sophisticated enough to know whether the house is

on fire or whether someone has just lit a match. It can't distinguish between what's an okay thing to think about and what's not, so it takes a blanket approach and shuts everything down. To protect the mind it activates one of its limited repertoire of responses: either fight, flight or freeze. Fight or flight are more obvious. The freeze response is different. This is the rabbit in front of the headlights scenario where the senses (notably hearing, movement, sight, decision-making) are impaired or in extremis completely shut down temporarily in order to recover.

Because the smoke detector operates milliseconds faster, it's able to shut out the fire investigator. In these circumstances our capacity to pause, make sense of what's happening and eventually restore our emotional equilibrium gets hijacked. It's like one component of the AIP, the smoke detector, is saying, "Danger, danger" while the other component, the fire investigator, is saying "Wait a minute, it might not be so bad." But the fire investigator can't be heard above the noise of the smoke detector. In other words when the hardware of the 'emotional computer' in our brain has too many conflicting instructions being inputted at once the system overloads and eventually crashes.

This is when we can get stopped in our tracks: because if the traumatic event isn't processed (made sense of), it's prevented from becoming a memory, and therefore it remains a current problem: stuck in the system. A story that has no ending – it just keeps looping. We get flashbacks or intrusive thoughts in present day situations or events that remind us of the original trauma. We do our best to press the computer's STOP button: like avoiding situations which are likely to trigger these flashback experiences, but we can find our lives getting more and more limited. It's like we keep living our past in our present, and if we don't attend to the wound that trauma leaves us with, we are likely to not only live our past in our present, but into our future too.

In the next part (Part4) we'll look at therapies that break out of this loop and leave the trauma behind.