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TRAUMA NETWORK FOR CHILDREN

TRAUMA AND THE BRAIN

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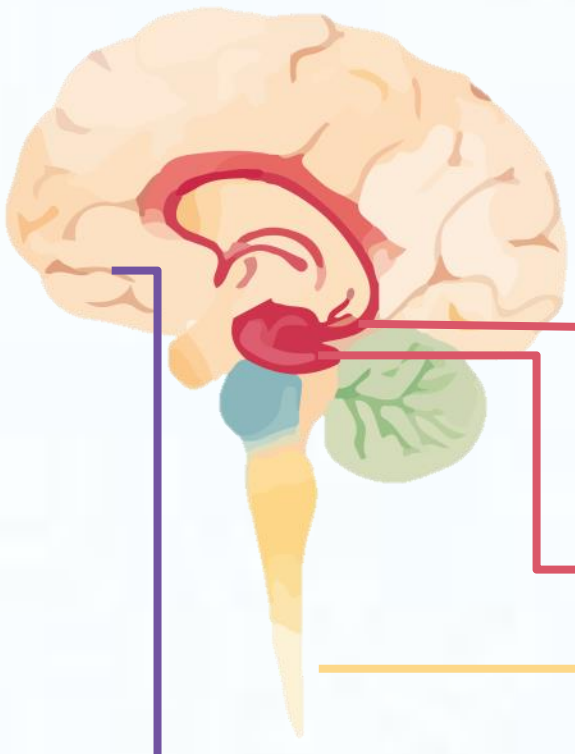
The brain is a complex organ that researchers are still working on fully understanding. Though there's a lot we still don't know, some facts about how trauma affects the brain have been established. To understand them, let's look at the brain structures involved when we experience a threat.

THE BRAIN, SIMPLIFIED



BRAIN STEM

First part of the brain to develop – it develops when we are in utero! This part of the brain is responsible for basic functions such as breathing, heart rate, sleep, and hunger.

HIPPOCAMPUS

Consolidates our memories

AMYGDALA

Threat detection system

Part of the **LIMBIC SYSTEM**

Key structures when it comes to the initial feelings experienced during a traumatic event, and the memories of the event.

PRE-FRONTAL CORTEX

Part of the cortex, which is the last part of the brain to develop. It is associated with higher brain functions such as planning, reasoning, decision-making, and judgement.

When a person experiences a real or imagined threat, this is first registered in the brain stem, which in turn sets off the amygdala. When the amygdala is activated, the fight-flight-freeze response occurs. Simultaneously, the hippocampus takes in information about the threat and stores it in our memory bank. During our experience of the threat, the limbic system is in full force. After a threat is over, we use our pre-frontal cortex to evaluate and process the threat; if we evaluate that we are no longer in danger, we are able to deactivate our fight-flight-freeze response.

HOW TRAUMA AFFECTS THE BRAIN

In a person who has experienced trauma, the amygdala is often on high alert – this makes sense as the brain and body are in survival mode, and the priority in this mode is to keep the person safe. However, this also means that a child can be hypervigilant to potential threats (even if imagined), and over time, the fight-flight-freeze responses are easily activated even with lower amounts of stress.

Hippocampal volume is also reduced in children who have post-traumatic stress symptoms. Given that the hippocampus plays an important role in memory and learning, this then has implications for a child's ability to learn and remember information about a variety of things, including information about the environment. Thus, a child may not be able to differentiate between a safe and an unsafe situation; any situation that has even a slight resemblance to a past traumatic experience may trigger memories of being exposed to threat.

For a person who has experienced trauma, their pre-frontal cortex is not as effective at regulating the amygdala; thus, it becomes more difficult for the fight-flight-freeze response to be deactivated.

WHAT WE CAN DO

Psychoeducation

Provide psychoeducation about what happens in the brain – you don't need to go into detail though, especially if your client is very young! Normalise that their threat detection system was working well when there was a threat, and that it kept them safe then; assure them that there are ways to switch the alarm off and make it work only when it needs to.

Coping

Elicit the client's current coping strategies, and encourage them to use adaptive coping strategies. Equip them with strategies such as muscle relaxation, deep breathing, mindfulness, and even some distraction techniques (e.g. listening to music) – find something that works for them!

Professional support

Refer a child who has persistent trauma symptoms to a therapist who is qualified to do trauma work (e.g. Trauma-Focused Cognitive Behavioural Therapy).

REFERENCES

1. Understanding the ways children cope with threats (n.d.). Retrieved from https://www.blueknot.org.au/Resources/Information/Understanding-abuse-and-trauma/What-is-childhood-trauma/Childhood-trauma-and-the-brain
2. McLaughlin, K. (2014). How can trauma affect the brain? Retrieved from https://tfcbt.org/wp-content/uploads/2018/05/Trauma-and-the-Brain-Handout-2014.pdf

The Stay Prepared – Trauma Network for Children (TNC) programme is a joint collaboration between KK Women's and Children's Hospital (KKH) and Temasek Foundation Cares.
It aims to enhance the psychosocial capability of the Singapore community to support children and youth after crises or traumatic events.