

Neurobiology of Trauma



*'Aboriginal people have demonstrated a continued resilience to harmful legacies of colonisation, including violence and historical trauma, oppression, and state-sanctioned systemic removal of Aboriginal children from their families.'*¹

What is trauma?

- A traumatic event is a deeply distressing or disturbing experience. If an experience is overwhelming for the child (too frightening or too painful), it can lead to a traumatic response.
- A traumatic event is likely to involve a threat to life, the loss of liberty or a threat to liberty, abuse (including emotional, physical, or sexual abuse), neglect, or physical harm or the threat of harm.
- A traumatic experience can happen directly to a child, such as being physically abused; or it can be something they have witnessed, such as living in a home with family violence.

The history of Aboriginal and Torres Strait Islander trauma

*'Around the world, indigenous peoples have experienced colonisation, cultural oppression, forced assimilation, and absorption into a global economy with little regard for their autonomy or wellbeing. These profound transformations have been linked to high rates of depression, alcoholism, violence and suicide in many communities, with the most dramatic impact on youth.'*²

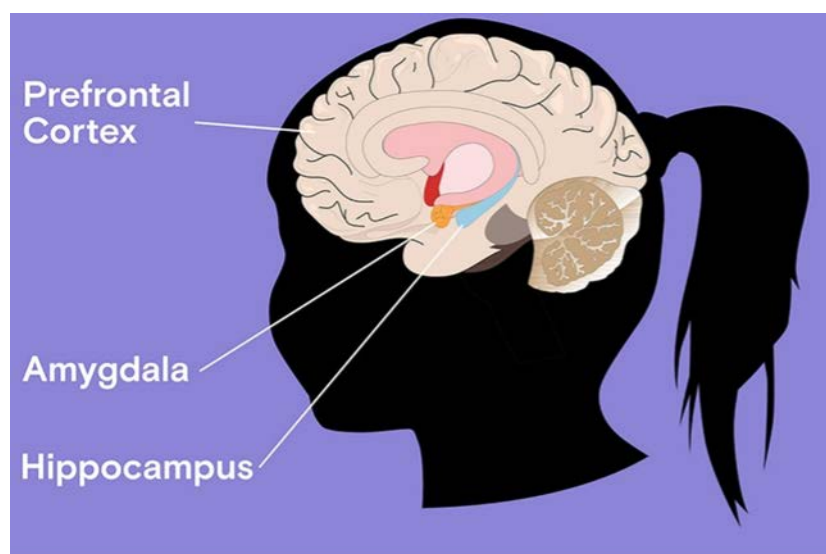
How trauma impacts on Aboriginal and Torres Strait Islander children's wellbeing

Brain development in infancy and early childhood lays the foundation for all future development, including mental health.

The interconnecting wires of the brain, called neural pathways, form at great speed and depends on the repetition of experiences. Experiences teach the brain what to expect and how to respond. When experiences are traumatic, the pathways getting the most use are those responding to the trauma. This reduces the formation of other pathways needed for adaptive behaviour.³

Areas of the brain most impacted by trauma and adversity

Ongoing exposure to trauma in childhood can lead to reduced connections in several critical areas of the brain, which can result in reduced brain functioning. The **amygdala**, **hippocampus** and **prefrontal cortex** have been identified as the three areas of the brain impacted by experiences of trauma.



Amygdala

This is the fear centre of the brain. It alerts us to danger and triggers our emotional responses, including the 'fight, flight or freeze' responses.

Abuse and neglect can cause overactivity in the amygdala, creating a state of high alert in children, even when there is no danger or threat.^{4,5} This heightened state can become a way of life that is difficult to change and can prevent the child from feeling safe and calm.

Hippocampus

The hippocampus is central to learning and memory. Childhood trauma can impair development of this critical area,^{6,7} resulting in reduced memory function. Children who have experienced trauma may struggle to keep up academically with their friends at school.

Prefrontal cortex

The prefrontal cortex is responsible for tasks such as problem solving, planning, and risk assessment. Children who have experienced ongoing trauma can have difficulty accessing this part of their brain, due to their being in a state of 'high alert'. Their brains are focused on looking out for dangers and staying safe, reducing their ability to take part in problem solving and planning activities and assessing risks.

Using the wisdom of culture to heal and protect

*'As part of the oldest living continuous culture in the world, Aboriginal and Torres Strait Islander people developed sophisticated ways of healing from trauma and loss. By reconnecting with knowledge systems and practices, culture can help to heal our pain and create opportunities for harmony and balance that allow Aboriginal and Torres Strait Islander people to participate more fully in family and community life in healthy, safe and confident ways.'*⁸

*'This journey of growing our own knowledge and understanding is an important one so that our children and young people are strong in spirit, strong in culture and become strong people, able to transverse our modern world with pride in their cultural identity.'*⁸

References

1. Chamberlain, C., Gee, G., Gartland, D., Mensah, F.K., Mares, S., Clark, Y., Ralph, N., Atkinson, C., Hirvonen, T., McLachlan, H., Edwards, T., Herrman, H., Brown, S.J., & Nicholson, J.M. (2020). Community perspectives of complex trauma assessment for Aboriginal parents: It's important, but how these discussions are held is critical. *Frontiers in Psychology* (11). [Available here](#).
2. Kirmayer, L.J., Tait, C., & Simpson, C. (2009). The mental health of Aboriginal peoples in Canada: Transformations of identity and community. In L.J. Kirmayer & G.G. Valaskakis (Eds.), *Healing traditions: The mental health of Aboriginal peoples of Canada* (pp. 3–35). Vancouver: UBC Press.
3. Perry, B., Pollard, R., Blakley, T., Baker, W., & Vigilante, D. (1995). Childhood trauma, the neurobiology of adaptation and 'use-dependent' development of the brain: How 'states' become 'traits'. *Infant Mental Health Journal*, 16(4), 271–291.
4. National Scientific Council on the Developing Child. (2010). *Persistent fear and anxiety can affect young children's learning and development* (Working paper 9). Cambridge: Harvard University Centre on the Developing Child. [Available here](#).
5. Shonkoff, J. P. (2012). The lifelong effects of early childhood adversity and toxic stress. *Pediatrics*, 129(1). 232–246. [Available here](#).
6. McCrory, E., De Brito, S. A., & Viding, E. (2011). The impact of childhood maltreatment: A review of neurobiological and genetic factors. *Frontiers in Psychiatry*, 2(48). [Available here](#).
7. Wilson, K. R., Hansen, D. J. & Ming, L. (2011). The traumatic stress response in child maltreatment and resultant neuropsychological effects. *Faculty Publications, Department of Psychology*, 549. [Available here](#).
8. Tucci, J., J Mitchell, M., Lindeman, L., Shilton, & Green, J. (2017). *Strengthening community capacity to end violence: A project for NPY Women's Council*. Alice Springs: NPY Women's Council and Australian Childhood Foundation. [Available here](#).