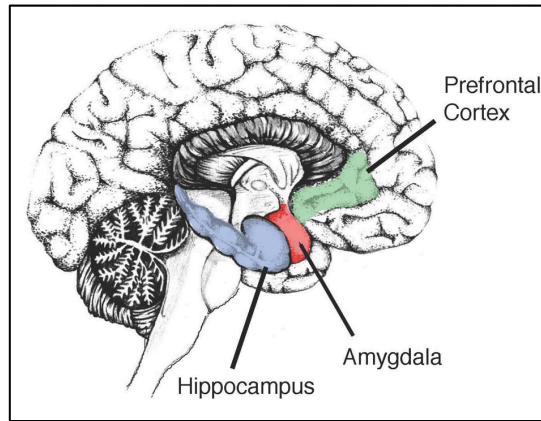


## How can trauma affect the brain?



The way trauma influences brain development will be different for each child. Just as each child will have different emotional responses to a traumatic event, the way that the brain responds to trauma will also vary across children. The following regions of the brain are the most likely to change following a traumatic event.

The **amygdala** is designed to detect and react to people, places, and things in the environment that could be dangerous. This is important for safety and survival. After trauma, the amygdala can become even more highly attuned to potential threats in the environment, leading a child to closely monitor their surroundings to make sure they are safe and have strong emotional reactions to people, places, or things that might be threatening or that remind them of the trauma. This heightened attention to potential threats in the environment can make it hard for children to pay attention in school, go new places, or interact with people they don't know.

The **medial prefrontal cortex (mPFC)** helps to control the activity of the amygdala and is involved in learning that previously threatening people or places are now safe. Connections between the mPFC and amygdala are sometimes not as strong in children who have experienced trauma. As a result, the mPFC is not as effective at reducing amygdala reactivity to people, places, and things that are in fact safe and no longer predict danger. This can lead to persistent elevations in fear and anxiety about cues that remind children of the trauma they experienced.

The **hippocampus** is involved in learning and memory. Impairments in learning and memory have been seen in children who have experienced trauma. This suggests that trauma may affect how the hippocampus develops. Trauma likely impacts a variety of types of learning and memory, such as the ability to learn and remember information about the surrounding environment. As a result, children who experience trauma may not be able to retain information about how to tell if one situation is safe and another is dangerous, leading them to experience harmless situations as scary. For example, a child who has experienced trauma may have difficulty distinguishing between activities that are dangerous (e.g., walking down a dark alley) and safe (e.g., walking around a dark corner at home).

**Critically, these changes in the brain are *not* permanent.** The brain is remarkably plastic, meaning that it changes in response to social and environmental experiences. This enables us to learn, form relationships with people, and develop new skills. Changes in the brain that happen after trauma can improve over time. This is particularly likely to happen when children experience safe, stable, and supportive environments after trauma. In fact, certain kinds of psychotherapy, like cognitive behavioral therapy, can actually lead to positive changes in the same regions of the brain that are influenced by trauma.

Created by Katie McLaughlin, Stress and Development Lab, University of Washington. If you would like to learn more about trauma and brain development or to learn about participating in a research study, please contact the Stress and Development Lab: **206-543-5183**, <http://stressdevelopmentlab.org>.

## Tips for Helping Children who have Experienced Trauma

1. Make sure that the children's environment is and feels as safe as possible.
  - a. Minimize fighting, arguing, or raised voices that might seem like they will lead to violence.
  - b. Keep doors locked.
  - c. Review how to handle calls or someone coming to the door that is unfamiliar.
2. Create a safety plan for situations where there may be ongoing dangers (e.g., Domestic Violence, unsafe neighborhoods).
  - a. Set up a written plan for specific risky situations.
  - b. Have back up plans for getting in contact when separated or unable to reach by usual methods.
  - c. Identify safe people and places that children can turn to if necessary.
3. Increase support and reassurance from caregivers.
  - a. Give a lot of reassurance. Be specific that the situation is safe now.
  - b. Be careful not to communicate that because of the trauma the world should be seen as a very dangerous place.
4. Help children face up to non-dangerous situations to learn they can handle them.
  - a. Identify people, places, and topics, things that may be reminders of the trauma but are not in themselves dangerous, that the child seems to be reacting strongly to or avoiding.
  - b. Support children in approaching, not avoiding, these non-dangerous reminders.
  - c. Help them learn to tell the difference between danger and non-dangerous reminders (e.g., every raised voice is not a sign of impending DV).
5. Make sure children have coping skills they can use.
  - a. Review coping skills such as relaxation, breathing, distraction (listening to a favorite song, game), meditating. Identify which ones the child is likely to use and practice it with him or her.
  - b. Prompt the child to use the coping skills when he or she seems to be getting anxious or worried unnecessarily.
6. Find them a therapist who can provide Trauma Focused-Cognitive Behavioral Therapy (TF-CBT) if they have persistent posttraumatic stress symptoms.
  - a. If the child has significant ongoing distress, TF-CBT is a proven treatment.

These are all strategies to prevent any brain changes from becoming permanent and to restore the child to normal functioning. You can help support your child's brain development!