

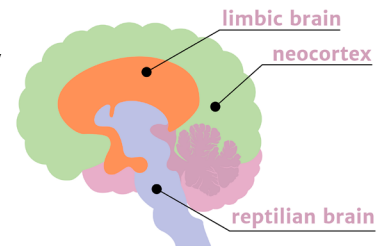
# Behavioral Threat Assessment and Management Institute

## How Trauma Impacts the Brain

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The brain can be described in three functional layers:

1. The reptilian brain is responsible for instincts and automatic body processes.
2. The limbic system processes emotions and conveys sensory relays.
3. The neocortex controls cognitive processing, decision-making, learning, and memory.



During traumatic events:

- ❖ The **reptilian brain** helps us react quickly, often without thinking. However, individuals that experience severe or multiple instances of trauma may develop a habit of reactionary behavior (without logic of thought).
- ❖ In the limbic region, the **hippocampus** plays a major role in learning and memory. An increase in the stress hormone glucocorticoid kills cells in the hippocampus, which renders it less effective in making synaptic connections necessary for memory consolidation. This interruption keeps both the body and mind stimulated in reactive mode as neither element receives the message that the threat has transformed into the past tense.
- ❖ The **amygdala** sends danger signals from the limbic system to the reptilian brain. When activated by fear, it releases cortisol and our natural fight, flight, freeze, or fawn responses are activated. After trauma the amygdala can get caught up in a highly alert and activated loop during which it looks for and perceives threat everywhere. An overactive amygdala can lead to:
  - Classic symptoms of PTSD, including flashbacks, avoidance, and intense emotional reactions.
  - Hypervigilance
  - Anxiety disorders
  - Panic attacks
- ❖ **Cortisol** can cause an individual to feel distracted, disruptive, defiant, combative, dissociated, hyperactive, and/or disengaged. It can remain in the body for 2-3 hours following a stressful, dangerous or traumatic experience. This means if someone is engaged in a stressful, dangerous or traumatic experience before leaving home, they can still be in a state of fight, flight, freeze or hide hours later. Impairments to the hippocampus can cause:
  - Depression
  - Chronic Stress
  - Health problems
  - Unhealthy lifestyle choices
  - Interpersonal problems