

What Happens to A Traumatic Memory in The Brain?

A traumatic memory is not stored like a regular memory. Instead of being a coherent, linear narrative, it is often a collection of fragmented sensory details and emotional experiences. This is due to the way the brain's "survival mode" alters the process of memory formation.

Here's a breakdown of what happens to a traumatic memory in the brain:

1. Disruption of the Hippocampus

The hippocampus is the brain's "filing cabinet," responsible for organizing memories and giving them a time and place stamp. It helps you recall an event as something that happened in the past. During a traumatic event, the high levels of stress hormones (like cortisol and adrenaline) can disrupt the functioning of the hippocampus.

This disruption means that the traumatic memory isn't properly organized or contextualized. It's not filed away with a clear beginning, middle, and end. Instead, it remains raw and unintegrated, making it feel like it's happening in the present, even long after the event has passed. This is why a person might experience flashbacks—a vivid, re-experiencing of the trauma with a sense of being there again.

2. Hyperactivity of the Amygdala

The amygdala is the brain's alarm system, and it becomes highly active during a traumatic event. It's responsible for attaching emotional significance to memories, particularly fear. While the hippocampus is suppressed, the amygdala is working overtime, creating a "hot" memory that is heavily imprinted with fear.

Because the memory is primarily stored in the amygdala, it's not a narrative; it's a sensory and emotional experience. This is why a traumatic memory can be triggered by a specific smell, sound, sight, or sensation that was present during the trauma. The brain, having not properly filed the memory as "past," interprets these triggers as an immediate threat.

3. Suppression of the Prefrontal Cortex

The prefrontal cortex is the brain's rational, thinking center. It's responsible for language, self-awareness, and emotional regulation. During trauma, it is essentially "shut down" to allow for quick, instinctive survival responses. This suppression can have a lasting impact on how the traumatic memory is processed.

With the prefrontal cortex offline, the ability to put the experience into words and create a coherent narrative is impaired. This can lead to a lack of a clear, verbal story about what happened. Instead, the memory exists as a series of disconnected images, sounds, and physical sensations. This is why many trauma survivors have

a hard time talking about their experience or feel that words can't capture what they went through.

The Result: A Fragmented "Body Memory"

Ultimately, a traumatic memory is not a story you can tell. It's often an **implicit** or "body memory." These are memories that are stored in the body and brain as sensations, emotions, and survival responses, rather than as a conscious, explicit narrative.

This is why healing from trauma often involves more than just talking about the event. It requires therapies that address the body's stored stress and re-engage the prefrontal cortex and hippocampus to properly process and integrate the memory into a coherent and safe narrative of the past.