

Researchers have found that they can indirectly retrieve and weaken traumatic memories

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Scientists could be a step closer to finding a way to reduce the impact of traumatic memories, according to a Texas A&M University study published recently in the journal *Nature Neuroscience*.

The report details a study by researchers from the Department of Psychological and Brain Sciences and the Institute for Neuroscience. Stephen Maren, professor of psychological and [brain sciences](#), said the group's findings suggest that procedures used by clinicians to indirectly reactivate traumatic memories render a window whereby those memories can be altered, or even erased completely.

In therapy, imaginal reminders are often used to safely retrieve traumatic memories of experiences. For example, Maren said a military veteran wounded by an improvised explosive device may be asked to re-experience trauma cues—like the lights and sounds of the explosion—without the

negative consequences. The idea is that the [fear](#) responses can be dampened through this exposure therapy.

"The one major challenge is when you do the extinction procedures, it doesn't erase the original trauma [memory](#)," Maren said. "It's always there and can bubble back up, which is what causes relapse for people who re-experience fear."

With this in mind, the researchers hoped to answer whether they could isolate a memory and drive [fear responses](#) by reactivating it artificially—and potentially disrupt the original memory itself. Maren said their findings suggest that procedures currently used by clinicians to indirectly reactivate [traumatic memories](#) create an opportunity to change or eliminate them.

To do this, the researchers used a conditioning procedure in which a cue becomes indirectly associated with a fearful event. When the cue is presented later, it indirectly reactivates a memory of the event and increases activity in the hippocampus, a brain area important for memory.

The study showed that indirectly reactivating a contextual fear memory through re-exposure to the cue can make the memory vulnerable to disruption. Maren said further research is needed to answer if scientists can produce a permanent loss of the traumatic information.

More information: Reed L. Ressler et al, Covert capture and attenuation of a hippocampus-dependent fear memory, *Nature Neuroscience* (2021). [DOI: 10.1038/s41593-021-00825-5](https://doi.org/10.1038/s41593-021-00825-5)

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