

Trauma heightens brain sensitivity to negative events

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Survivors of an August 2001 trans-Atlantic flight that lost all power nearly 100 miles from land vividly recalled the ordeal nearly a decade later and showed heightened memories of a separate trauma - the 9/11 terrorist attacks.

The findings, detailed in a study co-authored by Cornell neuroscientist Adam Anderson and published online in the journal *Clinical Psychological Science*, offer clues about how the brain processes near-death scares and other traumatic autobiographical memories.

Eight passengers on Air Transat Flight 236 (AT 236), which narrowly avoided an ocean crash, recalled the experience at the University of Toronto's Rotman Research Institute while MRI scanners monitored their brains. They also recounted another emotionally charged event, the 9/11 attacks, and a neutral occurrence, such as a recent road trip.

Researchers saw a "traumatic memory enhancement effect" in AT 236 survivors, who remembered sights, sounds and other episodic details from the event to a great degree. Compared to other study participants who had not experienced trauma firsthand, passengers also demonstrated heightened recall of 9/11, which occurred weeks after their brush with death. Survivors' recollections, scans revealed, triggered increased activation in brain regions linked to emotional memory, including the amygdala, medial temporal lobe, anterior and posterior midline and visual cortex.

The results, authors write, suggest that trauma leaves an imprint on the brain that alters how we process information and emotion, perhaps making us more attuned to subsequent negative occurrences.

"Unlike many previous studies of trauma and its neurological effects, this is one of the first to use real experiences from survivors of the same life-threatening event," said Anderson, associate professor of human development in the College of Human Ecology. "It's remarkable that such [traumatic memories](#) present quantifiable emotional enhancement, that this enhancement has a footprint in the brain, and that this footprint endures nearly a decade after the event."

More information: "The Neural Correlates of Memory for a Life-Threatening Event: An fMRI Study of Passengers From Flight AT236." *Clinical Psychological Science* 2167702615589308, first published on June 24, 2015 [DOI: 10.1177/2167702615589308](https://doi.org/10.1177/2167702615589308)

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