# Posttraumatic brain activity can predict resilience to PTSD, research suggests

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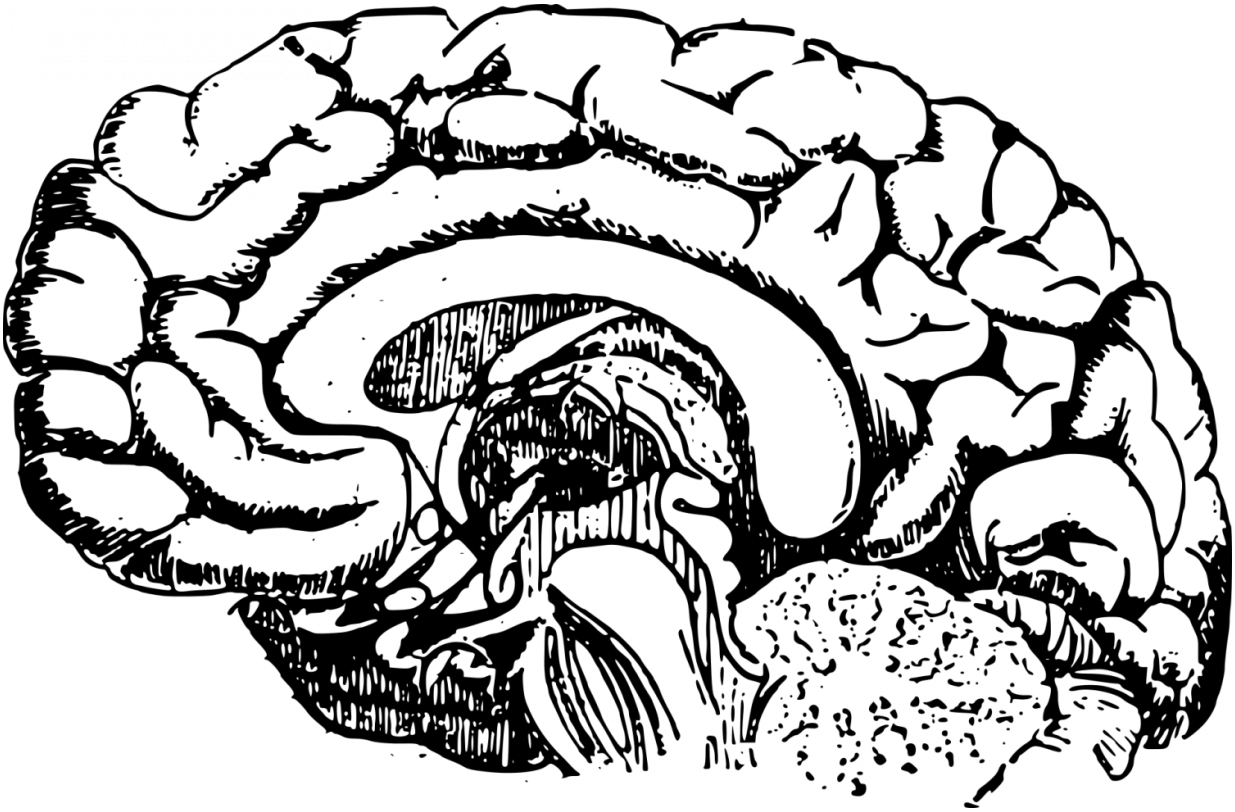

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After a traumatic experience, most people recover without incident, but some people—between 2% and 10%—develop posttraumatic stress disorder (PTSD), a mental health condition that can cause debilitating symptoms of anxiety due to emotional dysregulation. PTSD symptoms

are present in up to 40% of trauma survivors in the acute aftermath of trauma, but full-blown PTSD develops in only a small subset of cases. Early identification of those at risk is critical for both early treatment and possible prevention.

A new study led by Israel Liberzon, MD, at Texas A&M University, aimed to do just that. The study appears in *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*.

Researchers have long understood that PTSD involves altered brain processing in areas associated with emotion processing and modulation, including the amygdala, insula, and prefrontal cortex.

But, it has remained unclear when the PTSD-associated differences arise. In this work, the researchers collected brain scans from 104 survivors of trauma—usually a car accident—at 1, 6, and 14 months after the accident. By looking at brain activity so soon after the trauma, the researchers hoped to identify predictors of who would be more at risk or resilient to developing chronic PTSD.

Dr. Liberzon said of the findings, "In this largest-to-date, prospective study of early post-trauma survivors, greater activation in right inferior frontal gyrus, a region linked to cognitive control and emotional reappraisal, predicts better recovery from early PTSD symptoms. These findings highlight the key roles of cortical/cognitive regions in regulation of fear and in PTSD development."

Importantly, the researchers saw changes in the patients' brain activity change over time, reflecting an ongoing, perhaps pathological process.

Cameron Carter, MD, Editor of *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, said of the study, "These findings highlight the key role that the prefrontal cortex may play in conferring

resilience to the harmful effects of trauma, through its function representing contextual information and regulating emotional responses."

Dr. Liberzon added, "Understanding brain circuits linked to the progression of PTSD from an acute to a chronic condition is critical for understanding its pathophysiology, and eventually for the development of mechanism-informed treatment. The results might also help clinicians to start identifying and treating early trauma survivors at greater risk of developing chronic PTSD a year after the traumatic event."

**More information:** Jony Sheynin et al, Greater Early Post-Trauma Activation in Right Inferior Frontal Gyrus Predicts Recovery from Posttraumatic Stress Disorder Symptoms, *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging* (2023). DOI: 10.1016/j.bpsc.2023.07.002

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