

# Talk therapy may reverse biological changes in PTSD patients

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A new paper published in *Biological Psychiatry* suggests that cognitive behavioral therapy for posttraumatic stress disorder (PTSD) not only reduces symptoms but also affects the underlying biology of this disorder.

The researchers, led by Dr. Szabolcs Kéri at the National Institute of Psychiatry and Addictions and University of Szeged in Hungary, recruited 39 individuals diagnosed with PTSD to participate in the study. For a comparison group, they also included 31 individuals who had been exposed to trauma, but who did not develop PTSD. The individuals with PTSD then received 12 weeks of [cognitive behavioral therapy](#), whereas the non-PTSD group received no therapy.

Before and after the 12 weeks, the researchers measured the volumes of certain brain regions using [magnetic resonance imaging](#). They also collected blood samples to measure changes in expression of a specific gene, FKBP5, which has been implicated in the risk for developing PTSD and plays a role in regulating stress hormones.

Before therapy, compared with the control group, patients had lower FKBP5 [gene expression](#) and smaller hippocampal and medial orbitofrontal cortex volumes, important [brain regions](#) involved in learning, memory, and emotion regulation.

At the follow-up appointment 12 weeks later, the PTSD patients showed higher expression of FKBP5 and increased hippocampal volume. More

importantly, these changes were directly associated with clinical improvement among the patients. The increased FKBP5 expression, and to a lesser degree the increased [hippocampal volume](#), actually predicted improvement in their PTSD symptoms.

"The results show that structural changes in the brain, such as the shrinkage of the hippocampus, are reversible in trauma victims. Talk therapy may help normalize these alterations and improve symptoms," explained Kéri. "Furthermore, the regeneration of hippocampus correlated with the expression of a gene that balances the activity of the stress hormone cortisol at the level of cells."

"This study helps to link the alleviation of PTSD symptoms to improvement in stress-related alterations in the body and brain," said Dr. John Krystal, Editor of *Biological Psychiatry*.

Why are these results important? The findings suggest that talk therapy may modulate fundamental biological factors: changes in gene expression, brain structure, and psychological improvement may be closely interrelated. These conclusions highlight even further the importance of early intervention in PTSD development and treatment.

**More information:** The article is "Association Among Clinical Response, Hippocampal Volume, and FKBP5 Gene Expression in Individuals with Posttraumatic Stress Disorder Receiving Cognitive Behavioral Therapy" by Einat Levy-Gigi, Csilla Szabó, Oguz Kelemen, and Szabolcs Kéri ([DOI: 10.1016/j.biopsych.2013.05.017](https://doi.org/10.1016/j.biopsych.2013.05.017)). The article appears in *Biological Psychiatry*, Volume 74, Issue 11 (December 1, 2013)

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