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Contact: Rhiannon Bugno, Editorial Office  
+1 214 648 0880  
[Biol.Psych@utsouthwestern.edu](mailto:Biol.Psych@utsouthwestern.edu)

## PTSD Can Develop Even Without Memory of the Trauma

*Reports new study in Biological Psychiatry*

**Philadelphia, PA, August 14, 2014** – There are many forms of memory and only some of these may be critical for the development of posttraumatic stress disorder (PTSD), reports a new study by researchers at the University at Albany and the University of California Los Angeles. Their findings, published in the current issue of *Biological Psychiatry*, suggest that even with no explicit memory of an early childhood trauma, symptoms of PTSD can still develop in adulthood.

There are case reports of people who have experienced terrible life events that resulted in brain damage, some of whom developed syndromes similar to PTSD even though they had no recollection of the event itself.

These reports suggest that explicit memory may not be an absolute requirement for PTSD, whereas other forms of learning, such as fear conditioning, may be required.

Explicit memory is the type of memory that can be voluntarily recalled from prior experience and articulated.

To test this hypothesis, Dr. Andrew Poulos and his colleagues conducted a study designed to answer a basic question: If traumatic early life memories are lost, what persists of this experience?

In the laboratory, the researchers exposed juvenile rodents to a single session of unpredictable stress. Later, as adults, they tested the animals for their memory of the event and also measured their fear response.

“We found that our rodents, which failed to remember the environment in which they were traumatized, showed a persistent increase in anxiety related behavior and increased learning of new fear situations. These heightened levels of fear and anxiety corresponded with drastic changes in the daily rhythms of the circulating hormone corticosterone,” said Poulos.

Corticosterone is a hormone that, in part, regulates the body’s stress response. Interestingly, within the amygdala, a brain region crucial for the learning of fear, levels of a receptor for corticosterone were also increased.

Poulos added, “Future experiments in our laboratory will allow us to determine if this increase in glucocorticoid receptors within the amygdala and/or aberrant hormone levels sets up the organism for increased fear and anxiety.”

All together, these findings indicate that not remembering a traumatic event does not preclude an organism from experiencing some of the negative consequences of trauma, such as anxiety and heightened fear.

“These data highlight the importance of the many ways in which the brain processes traumatic experiences. Psychotherapy tends to focus heavily on the articulation of trauma memories. However, the current study highlights that these explicit memories may not represent all brain processes that drive distress and disability,” commented Dr. John Krystal, Editor of *Biological Psychiatry*. “In other words there may be a mismatch between what people think and how they feel about their traumatic experiences. Thus, there may be role in treatment for measuring other dimensions of response, such as physiologic arousal, through which some of these other forms of learning are expressed.”

The article is “Amnesia for Early Life Stress Does Not Preclude the Adult Development of Posttraumatic Stress Disorder Symptoms in Rats” by Andrew M. Poulos, Maxine Reger, Nehali Mehta, Irina Zhuravka, Sarah S. Sterlace, Camille Gannam, David A. Hovda, Christopher C. Giza, and

Michael S. Fanselow (DOI: 10.1016/j.biopsych.2013.10.007). The article appears in *Biological Psychiatry*, Volume 76, Issue 4 (August 15, 2014), published by Elsevier.

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#### **Notes for editors**

Full text of the article is available to credentialed journalists upon request; contact Rhiannon Bugno at +1 214 648 0880 or [Biol.Psych@utsouthwestern.edu](mailto:Biol.Psych@utsouthwestern.edu). Journalists wishing to interview the authors may contact Dr. Andrew Poulos at +1 518 591 8886 or [apoulos@albany.edu](mailto:apoulos@albany.edu).

The authors' affiliations, and disclosures of financial and conflicts of interests are available in the article.

John H. Krystal, M.D., is Chairman of the Department of Psychiatry at the Yale University School of Medicine, Chief of Psychiatry at Yale-New Haven Hospital, and a research psychiatrist at the VA Connecticut Healthcare System. His disclosures of financial and conflicts of interests are available [here](#).

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The journal publishes novel results of original research which represent an important new lead or significant impact on the field, particularly those addressing genetic and environmental risk factors, neural circuitry and neurochemistry, and important new therapeutic approaches. Reviews and commentaries that focus on topics of current research and interest are also encouraged.

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#### **Media contact**

Rhiannon Bugno  
Editorial Office  
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