

Borderline personality disorder: The "perfect storm" of emotion dysregulation

January 15 2013



A research team led by assistant professor Anthony Ruocco from the University of Toronto Scarborough led to new insights into the [brain](#) of borderline personality disorder. Credit: University of Toronto Scarborough

Originally, the label "borderline personality disorder" was applied to patients who were thought to represent a middle ground between patients with neurotic and psychotic disorders. Increasingly, though, this area of research has focused on the heightened emotional reactivity observed in patients carrying this diagnosis, as well as the high rates with which they also meet diagnostic criteria for posttraumatic stress disorder and mood disorders.

New research now published in *Biological Psychiatry* from Dr. Anthony Ruocco at the University of Toronto and his colleagues paints perhaps the sharpest picture we have so far of the patterns of brain activity which may underlie the intense and unstable [emotional experiences](#) associated

with this diagnosis.

In their report, the investigators describe two critical brain underpinnings of emotion dysregulation in borderline personality disorder: heightened activity in [brain circuits](#) involved in the experience of [negative emotions](#) and reduced activation of brain circuits that normally suppress negative emotion once it is generated.

To accomplish this, they undertook a meta-analysis of previously published neuroimaging studies to examine dysfunctions underlying negative emotion processing in borderline personality disorder. A thorough literature search identified 11 relevant studies from which they pooled the results to further analyze, providing data on 154 patients with borderline personality disorder and 150 healthy control subjects.

Ruocco commented, "We found compelling evidence pointing to two interconnected neural systems which may subserve symptoms of emotion dysregulation in this disorder: the first, centered on specific limbic structures, which may reflect a heightened subjective perception of the intensity of negative emotions, and the second, comprised primarily of frontal [brain regions](#), which may be inadequately recruited to appropriately regulate emotions."

Importantly, reduced activity in a frontal area of the brain, called the subgenual anterior cingulate, may be unique to borderline personality disorder and could serve to differentiate it from other related conditions, such as recurrent major depression.

"This new report adds to the impression that people with borderline personality disorder are 'set-up' by their brains to have stormy emotional lives, although not necessarily unhappy or unproductive lives," commented Dr. John Krystal, Editor of [Biological Psychiatry](#).

"Given that many of the most effective psychotherapies for [borderline personality disorder](#) work to improve emotion regulation skills, these findings could suggest that dysfunctions in critical frontal 'control' centers might be normalized after successful treatment," concluded Ruocco.

More information: The article is "Neural Correlates of Negative Emotionality in Borderline Personality Disorder: An Activation-Likelihood-Estimation Meta-Analysis" by Anthony C. Ruocco, Sathya Amirthavasagam, Lois W. Choi-Kain, and Shelley F. McMain ([doi: 10.1016/j.biopsycho.2012.07.014](https://doi.org/10.1016/j.biopsycho.2012.07.014)). The article appears in *Biological Psychiatry*, Volume 73, Issue 2 (January 15, 2013)

Provided by Elsevier

Citation: Borderline personality disorder: The "perfect storm" of emotion dysregulation (2013, January 15) retrieved 14 July 2023 from <https://medicalxpress.com/news/2013-01-borderline-personality-disorder-storm-emotion.html>

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