

# Depressive ruminations and the idling brain: New analysis explores neural processes behind depressive rumination

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Depressed people often find themselves preoccupied with guilty, shameful, or self-defeating thoughts for large parts of their day. These thoughts not only distract from other activities but also fail to resolve the underlying life issues. Further, the ideas that receive focused attention in these depressive ruminations are frequently quite distorted and lead to distress.

The way that [depressed people](#) repetitively attend to these negative thoughts in an unproductive manner reflects the reasoning behind use of the term ruminations - because they call to mind the repetitive chewing of cud by ruminants like cows or goats.

The propensity for rumination in [depression](#) has been well characterized. However, a new study by Dr. J. Paul Hamilton at the Laureate Institute for Brain Research and his colleagues at Stanford University sheds light on the brain mechanisms giving rise to these symptoms.

Their work highlights the interplay of a brain region implicated in depression, the subgenual [prefrontal cortex](#) (sgPFC) and a brain network involved in reflection, sometimes called the default mode network (DMN). The DMN becomes activated when the brain's task-oriented circuits are not engaged, i.e., during times of self-referential thought.

By reanalyzing existing studies, Hamilton and colleagues show that

depressive ruminations are more likely to emerge in depression when the firing of the sgPFC, signaling [depressed mood](#), is more tightly coordinated with the firing of the DMN. They propose that the observed increased connectivity reflects a functional integration of sgPFC and DMN processes which, in turn, support rumination in depression.

"This study shows that depression distorts a natural process. It would seem that normally the subgenual prefrontal cortex helps to bias the reflective process supported by the [default mode network](#) so that we can consider important problems in the service of developing strategies for solving them," commented Dr. John Krystal, Editor of *Biological Psychiatry*.

"However, in depression it seems that the subgenual prefrontal cortex runs amok hijacking normal self-reflection in a maladaptive way. This may be one reason that electrical stimulation of the sgPFC is helpful for some patients with severe or treatment-resistant [symptoms of depression](#)."

**More information:** The article is "Depressive Rumination, the Default-Mode Network, and the Dark Matter of Clinical Neuroscience" by J. Paul Hamilton, Madison Farmer, Phoebe Fogelman, and Ian H. Gotlib ([DOI: 10.1016/j.biopsych.2015.02.020](https://doi.org/10.1016/j.biopsych.2015.02.020)). The article appears in *Biological Psychiatry*, Volume 78, Issue 4 (August 15, 2015)

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