

# Good ruminations or bad ruminations in the depressed brain?

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All of us, at times, ruminate or brood on a problem in order to make the best possible decision in a complex situation. But sometimes, rumination becomes unproductive or even detrimental to making good life choices. Such is the case in depression, where non-productive ruminations are a common and distressing symptom of the disorder. In fact, individuals suffering from depression often ruminate about being depressed. This ruminative thinking can be either passive and maladaptive (i.e., worrying) or active and solution-focused (i.e., coping). New research by Stanford University researchers, published in Elsevier's *Biological Psychiatry*, provides insights into how these types of rumination are represented in the brains of depressed persons.

The interactions of two distinct and competing neural networks, the default mode network (DMN) and the task positive network (TPN), are particularly relevant to this question. Whereas the DMN supports passive, self-related thought, the TPN underlies active thinking required for solving problems, explained study author J. Paul Hamilton.

Using brain imaging technology, Hamilton and his colleagues found that, in [depressed patients](#), increasing levels of activity in the DMN relative to the TPN are associated with higher levels of maladaptive, depressive rumination and lower levels of adaptive, reflective rumination. These findings indicate that the DMN and TPN interact in depression to promote depression-related thinking, with stronger DMN influence associated with more worrying, less effective coping, and more [severe depression](#).

"It makes sense that non-productive ruminations would engage default-mode networks in the brain as these systems enable the brain to 'idle' when humans are not focused on specific tasks," commented Dr. John Krystal, editor of [Biological Psychiatry](#). "Better understanding the factors that control the switch between these modes of

function may provide insights into depression and its treatment."

**More information:** "Default-Mode and Task-Positive Network Activity in Major Depressive Disorder: Implications for Adaptive and Maladaptive Rumination" by J. Paul Hamilton, Daniella J. Furman, Catie Chang, Moriah E. Thomason, Emily Dennis, and Ian H. Gotlib. The authors are affiliated with Stanford University, Stanford, California. The article appears in *Biological Psychiatry*, Volume 70, Number 4 (August 15, 2011), [DOI 10.1016/j.biopsych.2011.02.003](#)

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