

# Drug may help overwrite bad memories

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Recalling painful memories while under the influence of the drug metyrapone reduces the brain's ability to re-record the negative emotions associated with them, according to University of Montreal researchers at the Centre for Studies on Human Stress of Louis-H. Lafontaine Hospital.

The team's study challenges the theory that memories cannot be modified once they are stored in the brain. "Metyrapone is a drug that significantly decreases the levels of cortisol, a stress hormone that is involved in [memory](#) recall," explained lead author Marie-France Marin. Manipulating cortisol close to the time of forming [new memories](#) can decrease the [negative emotions](#) that may be associated with them. "The results show that when we decrease stress hormone levels at the time of recall of a negative event, we can impair the memory for this negative event with a long-lasting effect," said Dr. Sonia Lupien, who directed the research.

Thirty-three men participated in the study, which involved learning a story composed of neutral and negative events. Three days later, they were divided into three groups – participants in the first group received a single dose of metyrapone, the second received double, while the third were given placebo. They were then asked to remember the story. Their memory performance was then evaluated again four days later, once the drug had cleared out.. "We found that the men in the group who received two doses of metyrapone were impaired when retrieving the negative events of the story, while they showed no impairment recalling the neutral parts of the story," Marin explained. "We were surprised that the decreased memory of negative information was still present once cortisol

levels had returned to normal."

The research offers hope to people suffering from syndromes such as post-traumatic stress disorder. "Our findings may help people deal with traumatic events by offering them the opportunity to 'write-over' the emotional part of their memories during therapy," Marin said. One major hurdle, however, is the fact that metyrapone is no longer commercially produced. Nevertheless, the findings are very promising in terms of future clinical treatments. "Other drugs also decrease cortisol levels, and further studies with these compounds will enable us to gain a better understanding of the [brain](#) mechanisms involved in the modulation of negative memories."

**More information:** The study received funding from the Canadian Institutes for Health Research and was published in the *Journal of Clinical Endocrinology & Metabolism*.

Provided by University of Montreal

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