Treating mental illness by changing memories of things past

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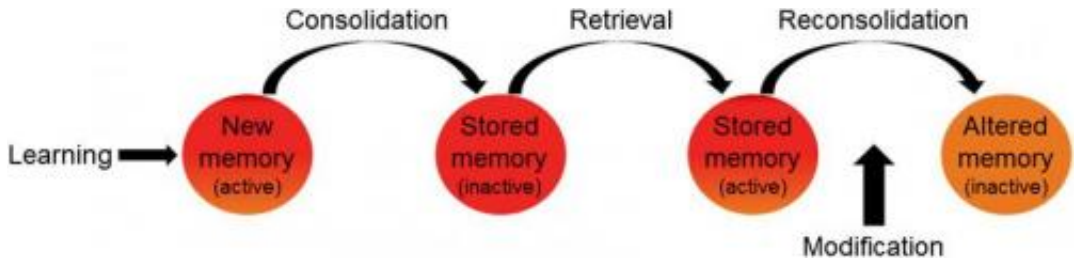

Credit: Elsevier

In the novel *À la recherche du temps perdu* (translated into English as *Remembrance of Things Past*), Marcel Proust makes a compelling case that our identities and decisions are shaped in profound and ongoing ways by our memories.

This truth is powerfully reflected in mental illnesses, like posttraumatic stress disorder (PTSD) and addictions. In PTSD, memories of traumas intrude vividly upon consciousness, causing distress, driving people to avoid reminders of their traumas, and increasing risk for addiction and suicide. In addiction, memories of drug use influence reactions to drug-related cues and motivate compulsive drug use.

What if one could change these dysfunctional memories? Although we all like to believe that our memories are reliable and permanent, it turns out that memories may indeed be plastic.

The process for modifying memories, depicted in the graphic, is called memory reconsolidation. After memories are formed and stored, subsequent retrieval may make them unstable. In other words, when a memory is activated, it also becomes open to revision and reconsolidation in a new form.

"Memory reconsolidation is probably among the most exciting phenomena in cognitive neuroscience today. It assumes that memories may be modified once they are retrieved which may give us the great opportunity to change seemingly robust, unwanted memories," explains Dr. Lars Schwabe of Ruhr-University Bochum in Germany. He and his colleagues have authored a review paper on the topic, published in the current issue of *Biological Psychiatry*.

The idea of memory reconsolidation was initially discovered and demonstrated in rodents.

The first evidence of reconsolidation in humans was reported in a study in 2003, and the findings have since continued to accumulate. The current report summarizes the most recent findings on memory reconsolidation in humans and poses additional questions that must be answered by future studies.

"Reconsolidation appears to be a fundamental process underlying cognitive and behavioral therapies. Identifying its roles and mechanisms is an important step forward to fully harnessing the reconsolidation process in psychotherapy," said Dr. John Krystal, Editor of Biological Psychiatry.

The translation of the animal data to humans is a vital step for the potential application of memory reconsolidation in the context of mental disorders. Memory reconsolidation could open the door to novel treatment approaches for disorders such as PTSD or drug addiction.

More information: "Reconsolidation of Human Memory: Brain Mechanisms and Clinical Relevance" by Lars Schwabe, Karim Nader, and Jens C. Pruessner (doi: 10..1016/j.biopsych.2014.03.008). The article appears in *Biological Psychiatry*, Volume 76, Issue 4 (August 15, 2014).

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