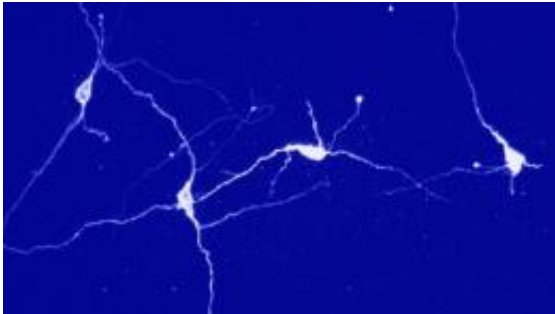


Researchers find ECT can rid the mind of selected memory

December 23 2013, by Bob Yirka



Neurons. Image credit: Denis Burdakov

(Medical Xpress)—A team of researchers working in the Netherlands has found that partial selective memory deletion can be achieved using Electroconvulsive Therapy (ECT). In their paper published in the journal *Nature Neuroscience*, the team describes a memory experiment they conducted with the assistance of severely depressed people who had already consented to undergoing ECT and found that such treatment could be used to at least partially erase memories of a specified event.

Scientists have known since 1968 (thanks to experiments conducted by psychologist Donald Lewis) that applying a shock to the brain of a rat can cause it to forget something unpleasant it had remembered. Subsequent experiments have found that memories can be blunted using repetitive type therapies or by injecting drugs such as propranolol into the brain. The one element all such findings have in common is that they

must be applied during a time when a person is attempting to recall a certain event. Scientists hope that such research may lead to new ways to treat PTSD and other memory related mental ailments. In this new effort the researchers explored the idea of erasing specific memories using ECT.

Currently, people with severe depression who don't respond to any other type of treatment are offered ECT as a last resort. It has a remarkably good success rate (approximately 86 percent rate of remission) but causes some degree of memory loss. In the Netherlands study, the team enlisted the assistance of 39 such patients who had already agreed to undergo ECT. Instead of receiving just the standard treatment, however, the volunteers were asked to watch two slide shows (along with narration) —both of which contained unsettling content. A week later the participants were divided into three groups—two to get the shock treatment and one to serve as a control group—all were asked to remember and describe one of the traumatic events described in the slide shows. Afterwards, one of the groups was given ECT and then the next day was asked to recount both stories. The other non-control group was given ECT and then were asked right afterwards to recount the unpleasant stories. The control group was asked to try to recount both stories as well.

In comparing the results between the groups, the researchers found that the first group that had been quizzed a day after receiving ECT had difficulty recalling the first story, which they had recounted prior to ECT, but remembered most of second. The second group that received ECT were able to recall both stories equally well, and the third—the control group—were able to remember both stories better than either of the groups that had received ECT.

The experiment suggests that it is possible to selectively erase [short term memory](#) in a controlled environment. Much more research will have to

be conducted to determine if it would work in real world situations.

More information: An electroconvulsive therapy procedure impairs reconsolidation of episodic memories in humans, *Nature Neuroscience* (2013) [DOI: 10.1038/nn.3609](https://doi.org/10.1038/nn.3609)

Abstract

Despite accumulating evidence for a reconsolidation process in animals, support in humans, especially for episodic memory, is limited. Using a within-subjects manipulation, we found that a single application of electroconvulsive therapy following memory reactivation in patients with unipolar depression disrupted reactivated, but not non-reactivated, memories for an emotional episode in a time-dependent manner. Our results provide evidence for reconsolidation of emotional episodic memories in humans.

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