

Research identifies a way to block memories associated with PTSD or drug addiction

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New research from Western University could lead to better treatments for Post-Traumatic Stress Disorder (PTSD) and drug addiction by effectively blocking memories. The research performed by Nicole Lauzon, a PhD candidate in the laboratory of Steven Laviolette at Western's Schulich School of Medicine & Dentistry has revealed a common mechanism in a region of the brain called the pre-limbic cortex, can control the recall of memories linked to both aversive, traumatic experiences associated with PTSD and rewarding memories linked to drug addiction. More importantly, the researchers have discovered a way to actively suppress the spontaneous recall of both types of memories, without permanently altering memories. The findings are published online in the journal *Neuropharmacology*.

"These findings are very important in disorders like PTSD or [drug addiction](#). One of the common problems associated with these disorders is the obtrusive recall of memories that are associated with the fearful, emotional experiences in PTSD patients. And people suffering with addiction are often exposed to environmental cues that remind them of the rewarding effects of the drug. This can lead to drug relapse, one of the major problems with persistent addictions to drugs such as opiates," explains Laviolette, an associate professor in the Departments of Anatomy and Cell Biology, and Psychiatry. "So what we've found is a common mechanism in the brain that can control recall of both aversive memories and memories associated with rewarding experience in the case of drug addiction."

In their experiments using a rat model, the neuroscientists discovered that stimulating a sub-type of dopamine receptor called the "D1" receptor in a specific area of the brain, could completely prevent the recall of both aversive and reward-related memories. "The precise mechanisms in the brain that control how these memories are recalled are poorly understood, and there are presently no effective treatments for patients suffering from obtrusive memories associated with either [PTSD](#) or addiction," says Lauzon. "If we are able to block the recall of those memories, then potentially we have a target for drugs to treat these disorders."

"In the movie, 'Eternal Sunshine of a Spotless Mind,' they attempted to permanently erase memories associated with emotional experiences," adds Laviolette. "The interesting thing about our findings is that we were able to prevent the spontaneous recall of these memories, but the memories were still intact. We weren't inducing any form of brain damage or actually affecting the integrity of the original memories."

Provided by University of Western Ontario

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