

Research discovers how marijuana affects the way the brain processes emotional information

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Drugs like marijuana act on naturally occurring receptors in the brain called cannabinoid receptors. However, the mechanisms by which these drugs produce their sensory and mood altering effects within the brain are largely unknown. Research led by Steven Laviolette at The University of Western Ontario has now identified a critical brain pathway responsible for the effects of cannabinoid drugs on how the brain processes emotional information. The findings, published in *The Journal of Neuroscience*, also help to explain the possible link between marijuana use and schizophrenia.

Laviolette and his team at the Schulich School of Medicine & Dentistry discovered that activating cannabinoid receptors directly in a region of the [brain](#) called the amygdala, can strongly influence the significance of emotional information and memory processes. It also dramatically increased the activity patterns of neurons in a connected region of the brain called the prefrontal cortex, controlling both how the brain perceived the emotional significance of incoming sensory information, and the strength of memories associated with these emotional experiences.

"These findings are of great clinical relevance given recent evidence suggesting that exposure to marijuana during adolescence can increase the likelihood of developing schizophrenia later in life," says Laviolette, an associate professor in the Department of Anatomy and Cell Biology.

"We know there are abnormalities in both the amygdala and prefrontal cortex in patients who have [schizophrenia](#), and we now know these same brain areas are critical to the effects of marijuana and other cannabinoid drugs on emotional processing."

Furthermore, the findings by Laviolette's laboratory identify a novel new brain pathway by which drugs acting on the cannabinoid system can distort the emotional relevance of incoming sensory information which in turn may lead to psychotic side-effects, such as paranoia, associated with heavy [marijuana](#) use. Developing pharmacological compounds, and there already are some, that block or modify this pathway could help control psychotic episodes. It could also be used to help patients with Post Traumatic Stress Disorder who have difficulty controlling the resurgence of highly emotional events into their memory.

Provided by University of Western Ontario

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