

Breakthrough study reveals how LSD dissolves a person's sense of self



[Rich Haridy](#)



This research is hoped to lead to the development of new treatments for a variety of psychiatric disorders including schizophrenia and depression(Credit: [agsandrew/Depositphotos](#))

A fascinating study led by scientists at the University of Zurich has uncovered key insights into the mechanisms behind how our brain generates our sense of self. The researchers administered lysergic acid diethylamide (LSD) to several participants in order to home in on where in the brain our sense of self is activated and what happens when a powerful psychedelic drug interferes with that process.

The fundamental goal of the research was to better understand the neurological and pharmacological mechanisms behind the brain's construction of its sense of self. With this knowledge scientists can subsequently hope to develop new treatments for psychiatric disorders that stem from fundamental distortions of that sense of self, including schizophrenia or depression.

"LSD blurs the boundaries between one's own self and others during social interactions," explains Katrin Preller, lead on the research. This makes the infamous psychedelic drug a perfect candidate for examining how the brain distinguishes between the self and others.

The study administered 24 subjects either LSD, LSD in combination with ketanserin, or a placebo. Ketanserin is a compound that is known to inhibit many of the effects of LSD by blocking the serotonin 2A receptor (5-HT_{2A} receptor). Each subject lay in an MRI scanner while undergoing a series of social interaction simulations with a virtual avatar. As well as the brain imaging, the subjects' eye movements were monitored to track when they were or were not following the gaze of the virtual avatar.

"This allowed us to show that brain regions which are important for distinguishing between self and others were less active under the influence of LSD," says Preller. "And this also changed social interactions."

The study demonstrated LSD-altered brain activity in several regions previously identified as fundamental for developing coherent self-representation during social interaction, including the posterior cingulate cortex, medial prefrontal cortex and the angular gyrus. Most importantly though was the observation that ketanserin normalized the effects of LSD to the point where the group influenced by ketanserin and LSD displayed similar results to those under the effect of the placebo.

These results strongly suggest that the 5-HT_{2A} receptor plays a fundamental role in the development of self-awareness, and differentiation between the self and others. The value of this research is two-fold. As well as simply increasing our knowledge of how the brain functions under the influence of psychedelic drugs, it is suggested that different psychiatric conditions could be treated by manipulating the 5-HT_{2A} receptor pathways.

Patients with schizophrenia, suffering from an inability to generate a stable sense of self, could potentially benefit from 5-HT_{2A} receptor antagonists. On the other hand, patients with an increased self-focus, suffering from depression, could benefit from 5-HT_{2A} receptor agonists.

This remarkable study is part of a [new wave of psychedelic research](#) sweeping the world. After the criminalization of LSD in the 1960s put the brakes on research for decades, many scientists are now pushing through [new studies on the amazing drug](#) and with the help of modern imaging techniques, we are uncovering revolutionary insights into the mysterious workings of our brain.

The new study was published in the journal [JNeurosci](#).

Source: [University of Zurich](#)