

'Magic Mushrooms' May Permanently Alter Personality

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Psilocybin is found in mushrooms such as *Psilocybe mexicana*.



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Psilocybe mexicana, the mushroom from which psilocybin was first extracted.

Just one strong dose of hallucinogenic mushrooms can alter a person's personality for more than a year and perhaps permanently, a new study finds.

People given psilocybin, the compound in "magic mushrooms" that causes hallucinations and feelings of transcendence, demonstrated a more "open" personality after their experience, an effect that persisted for at least 14 months. Openness is a psychological term referring to an appreciation for new experiences. People who are more open tend to have broad imaginations and value emotion, art and curiosity.

This personality warp is unusual, said study researcher Katherine MacLean, because personality rarely changes much after the age of 25 or 30. (In fact, one recent study found that by first grade our personalities are set pretty much for life.)

"This is one of the first studies to show that you actually can change adult personality," said MacLean, a postdoctoral researcher at The Johns Hopkins University School of Medicine.

The root of the change seems to be not the drug itself, MacLean told LiveScience, but the mystical experiences that psilocybin often triggers. These profound, transcendent feelings feel no less real to people for being chemically induced, she said. [Read: How Do Hallucinogens Work?]

"Many years later, people are saying it was one of the most profound experiences of their life,"

MacLean said. "If you think about it in that context, it's not that surprising that it might be permanent."

Tripping for science

Research on hallucinogens is usually associated with 1960s counterculture figures such as Ken Kesey and his LSD-fueled "Acid Test" parties. But within the last decade, a somber, step-by-step approach to studying the effect of hallucinogens has emerged, MacLean said. Experiments are tightly controlled — it's not easy to get permission to give volunteers illegal drugs — but they are revealing that substances associated more with Grateful Dead concerts than the psychiatrist's office may have medical uses after all.

In Massachusetts, the nonprofit research institute MAPS, or Multidisciplinary Association for Psychedelic Studies, is investigating the possibility of using the hallucinogen MDMA to treat post-traumatic stress disorder. Both LSD and psilocybin are under investigation for their use in treating anxiety; MacLean's postdoctoral adviser at Johns Hopkins, Ronald Griffiths, is leading a study to find out if psilocybin might ease anxiety and depression in cancer patients. Another of Griffiths' studies focuses on using psilocybin to break nicotine addiction.

In the current study, MacLean and her colleagues looked at personality questionnaires from 51 people who had taken psilocybin as part of two separate Johns Hopkins studies. The volunteers were all new to hallucinogenic drugs.

Each person attended between two and five eight-hour drug sessions in which they would sit blindfolded on a couch listening to music — a way to encourage introspection. During one of the sessions, the volunteers received a moderate-to-high dose of psilocybin, but neither they nor the experimenters knew whether they would be swallowing a psilocybin pill or a placebo on any given day.

In one experiment, participants came into the laboratory twice. On one visit they were given the real deal and another time they got Ritalin, which mimics the side effects of psilocybin without the hallucinations.

In another experiment, over a course of five sessions, participants received either a placebo or one of varying doses of the drug. For the purposes of this study, the researchers focused on the high-dose session, which was the same dose given during the first experiment.

Before the drug sessions, the participants filled out the personality questionnaire that measured openness. They also filled out the same questionnaires a few weeks later and then again about 14 months after their high hallucinogenic dose.

Transcendence in a pill

The results, published today (Sept. 29) in the *Journal of Psychopharmacology*, revealed that while other aspects of personality stayed the same, openness increased after a psilocybin experience. The effect was especially persistent for those who reported a "mystical" experience

with their dose. These mystical experiences were marked by a sense of profound connectedness, along with feelings of joy, reverence and peace, MacLean said. [Top 10 Mysteries of the Mind]

"It's probably not just psilocybin that causes changes like this, but more these kinds of profound life-changing experiences, whatever flavor they take," she said. "For a lot of people, psilocybin allows them to transcend their ways of thinking about the world."

About 30 of the 51 volunteers had a mystical experience, MacLean said. The openness changes in these participants were larger than those changes typically seen over decades of life experience in adults.

But this is a strictly do-not-try-this-at-home experiment, MacLean cautioned. The participants in the study were under close supervision during their session with the drug. Psychological support and preparation helped keep bad trips to a minimum, but many participants still reported fear, anxiety and distress after taking psilocybin.

"I could see how in an unsupervised setting, if that sort of fear or anxiety set in, the classic bad trip, it could be pretty dangerous," MacLean said, adding that the risk of unsupervised usage outweighs any potential reward. Psilocybin is classified as a Schedule I drug in the U.S., meaning the government considers it to have a high potential for abuse and no legitimate medical purpose. [Read: The 10 Most Destructive Human Behaviors]

It's not yet clear whether unsupervised usage would even result in the same changes in openness as seen in the study, MacLean said. The study group was small, and was already more religious and more open than the general population.

MacLean is now researching the effects of combining psilocybin with meditation. There could be therapeutic benefits to boosting openness, she said, including helping people break out of negative thought patterns. The studies might also illuminate the anecdotal connection between hallucinogens and art, she said: "On the most speculative side, this suggests that there might be an application of psilocybin for creativity or more intellectual outcomes that we really haven't explored at all."

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