

# Psilocybin reduces psychological pain after social exclusion

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Social problems are key characteristics in psychiatric disorders and are insufficiently targeted by current treatment approaches. By applying brain imaging methods, researchers at the University of Zurich now show that a small amount of psilocybin changes the processing of social conflicts in the brain. As a result, participants experienced social exclusion and social pain as less stressful. This could help to improve therapy of social problems.

Social ties are vital for mental and physical health. However, psychiatric patients in particular frequently encounter [social exclusion](#) and rejection. Furthermore, psychiatric patients often react more strongly to social rejection than healthy persons and this can have negative consequences for the development and treatment of [psychiatric disorders](#). However, social deficits in [psychiatric patients](#) are only insufficiently targeted by current treatment approaches, in particular because so far little is known about the neuropharmacological mechanisms underlying these processes in the brain.

**Social rejection is less painful after psilocybin**

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Researchers at the University Hospital of Psychiatry Zurich now showed that psilocybin, the active component of the Mexican magic mushrooms, influences these processes in the brain. In particular, it stimulates specific receptors of the neurotransmitter serotonin. This results in a reduced reaction to social rejection in the associated [brain areas](#). Consequently, participants felt less excluded after psilocybin administration than after the intake of a placebo. Furthermore, they report having experienced less [social pain](#).

The increased processing of and reactivity to social exclusion and social pain can increase the risk of patients withdrawing from social life and therefore experience less support. "Increased activity in brain areas such as the dorsal anterior cingulate cortex is associated with an increased experience of social pain. This has been shown to be present in different psychiatric disorders. Psilocybin seems to influence these particular brain areas", says Katrin Preller, first author of the study. The researchers applied functional magnetic resonance imaging (fMRI) to investigate these processes. Using a second imaging technique, magnetic resonance spectroscopy (MRS), they additionally showed that a further metabolite is involved in the experience of social pain: aspartate.

## New approaches for the treatment of social problems

"These new results could be groundbreaking for the illumination of the neuropharmacological mechanisms of social interaction and may help to develop new treatments", emphasizes Franz Vollenweider, director of the Neuropsychopharmacology and Brain Imaging Unit. On the one hand, the results can help to develop more effective medication to treat psychiatric disorders which are characterized by an increased reactivity to [social rejection](#), such as depression or

borderline personality disorder. "On the other hand", Vollenweider adds, "the reduction of psychological pain and fear can facilitate the therapist-patient relationship and therefore the psychotherapeutic treatment of formative negative social experiences."

**More information:** Effects of serotonin 2A/1A receptor stimulation on social exclusion processing, *PNAS*,  
[www.pnas.org/cgi/doi/10.1073/pnas.1524187113](http://www.pnas.org/cgi/doi/10.1073/pnas.1524187113)

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