

39th ECNP Congress, Munich: press release

LSD microdosing: study indicates it makes women's attention sharper, but no improvement in men

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Munich: A pilot study suggests that low doses of LSD may have different effects on sustained attention in women and men. The findings, presented at the ECNP annual congress in Munich, are preliminary, but they add to growing evidence that people may not all respond to psychedelic microdosing in the same way.

Microdosing means taking a very small amount of a psychedelic drug, below the level usually associated with a full psychedelic experience. Some people report using low-dose LSD in the hope of improving focus, concentration, productivity or mood, and there are also anecdotal reports of people using it to manage problems with attention. However, controlled scientific studies have produced mixed results, making it important to test these claims carefully.

A group of researchers from the University of Maastricht tested the responses of volunteers to microdosing. The randomised controlled study involved 48 healthy volunteers, including 24 women, with an average age of 36.9 years. Participants were randomly assigned to receive either placebo or four low doses of LSD, each containing 15 micrograms, over a two-week period (typical psychedelic effects tend to appear with doses greater than 60mcg). Neither the participants nor the researchers knew who had received LSD and who had received placebo until after the study was completed.

Researchers looked at three areas of mental performance: sustained attention, information processing and working memory. Participants completed tests at the start of the study, after the first dose, after the fourth dose and at follow-up. The most notable result was seen in a test of sustained attention, where people had to watch a screen and respond as quickly as possible when a signal appeared.

Women given the placebo in the study tended to have slower reaction times and more attention lapses than men given the same task. Under low-dose LSD, however, women responded about 8% faster to the stimulus than in the placebo condition (335ms, compared to 308ms under LSD) and made on average 2.3 sustained attention lapses, as against the 4.7 lapses made by the women who received the placebo. For attentional lapses, this pattern was seen after the first dose, after repeated dosing and at follow-up. No comparable improvement was observed in men given the microdoses.

Lead researcher, Iva Totomanova (of the University of Maastricht) said:

“We examined the effect of LSD on 3 different cognitive tasks. The key finding was that LSD improves how women can sustain attention in certain tasks. With the information processing and working memory cognitive tasks, the results were not as clear-cut, which may have led sex-related effects being missed in previous studies. It’s important to note that while our work suggests that microdosed LSD improves sustained attention in women, it does not show that low-dose LSD generally improves cognition, nor that women are generally more responsive to LSD than men. Instead, the results point to a more cautious message: effects may depend on the person, the cognitive task being measured and the circumstances of use. A better question may be, who responds to microdosing, and under what circumstances?”

The work is a re-analysis of an earlier completed study, so the authors say the results need to be confirmed in research designed specifically to examine sex differences (for example, by looking at hormone concentrations in the blood and taking into account menstrual phase, contraceptive use, etc).

Ms Totomanova added *“This is a small pilot study, so it does need to be confirmed in a larger population. If we can do that it may help us understand why some people respond to LSD in a particular way, when others don’t. We are beginning to see that people respond to psychedelics in different ways. With psychedelic pharmaceuticals, it looks like personalised medicine is important”*.

Commenting, Dr Mikkel Højlund (of the University of Southern Denmark) said:

“Microdosing of psychedelics has received much attention in media, so testing this in a proper research context is important to advance our knowledge on the subject. Even though it is a double-blind placebo-controlled study, the researchers are cautious: as they say, this is a small study, with several variables, but it merits further work on a bigger scale”.

This is an independent comment, Dr Højlund was not involved in this work.

Notes for Editors

This work is presented at the 39th ECNP (European College of Neuropsychopharmacology) Congress, taking place in Munich and online 10th-13th October 2026, see <https://www.ecnp.eu/congress2026/> The ECNP Congress is Europe’s leading platform for the science and treatment of brain disorders.

Conference Abstract

Sex differences in the cognitive effects of repeated low-doses of LSD: a randomised, placebo-controlled study

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Background: Psychedelic microdosing, i.e., the repeated use of small amounts of psychedelics, has recently gained scientific interest for its purported benefits on cognition. Observational studies describe perceived enhancements in concentration and memory [1], and improvements in

inattention and hyperactivity/impulsivity symptoms in patients with ADHD [2]. Controlled studies, however, have yielded mixed findings alongside a substantial number of null effects [3,4], which may be driven by inter-individual variability in treatment response. Biological sex may emerge as a potential moderator of psychedelic effects due to sex-related differences in serotonergic function and pharmacokinetics [5], which can influence cognitive outcomes.

Aim: This study aims to further explore the inter-individual variability in the effects of low doses of LSD (15 mcg) on cognition, focusing specifically on the influence of biological sex.

Methods: A randomized, double-blind, placebo-controlled study with a between-subjects design was conducted among healthy volunteers, with participants receiving either four low doses of LSD (15 mcg) or placebo treatment over two weeks. At baseline, on the first and last administration days, and at follow-up, participants performed tasks assessing sustained attention (the psychomotor vigilance task: PVT), information processing (the digital symbol substitution test: DSST), and working memory (the prospective memory task: PMT). Differences between the placebo and LSD conditions across the four testing days were estimated using a linear mixed model (LMM) approach with Condition (two levels), Time (four levels), and Sex (two levels) as fixed factors, and Age as a covariate.

Results: In total, forty-eight participants (n=24 female; mean age=36.9) were included in the study. Significant sex differences were observed in the total number of correct “no go” trials on the PMT ($p=.008$), with females having fewer correct inhibitions compared to males. A significant main effect of Sex on PVT performance was also demonstrated, with females exhibiting overall slower reaction times ($p=.012$) and a higher number of attentional lapses ($p=.033$) compared to males. Post-hoc analyses indicated a significant Condition $\times$ Sex interaction for these two outcome variables, with females performing faster ($p=.045$) and with fewer attentional lapses ($p=.031$) on the PVT under LSD compared to placebo. For attentional lapses, this effect varied across testing days, indicated by a significant Condition $\times$ Time $\times$ Sex interaction ($p=.006$), with fewer lapses in females receiving LSD compared to placebo on the first administration day ($p=.009$), the last administration day ($p=.012$), and at follow-up ($p=.021$). Notably, performance on the PVT varied significantly between males and females in the placebo condition (reaction time: $p=.003$; lapses: $p=.002$), whereas this difference was absent under LSD. No consistent sex-specific effects of LSD were observed for information processing (DSST) outcomes.

Conclusion: These results highlight the heterogeneity of cognitive responses to low doses of LSD and suggest that biological sex may moderate treatment effects. Exploratory findings indicate selective improvements in women’s sustained attention under LSD compared to placebo, suggesting a potential attenuation of sex differences in this domain. These results underscore the need for cautious interpretation of the purported cognitive benefits of psychedelic microdosing and warrant further investigation into individual differences in response.