

Ecstasy use affects ability to detect faces, shapes and patterns

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Global form processing helps the brain to detect visual information including faces, shapes and patterns. Image: Credit: Phu Son

Using ecstasy significantly affects a person's ability to detect faces, shapes and patterns, a study has found.

The study, published in the *Journal of Psychopharmacology*, discovered [ecstasy users](#) were poorer than matched controls at detecting patterns

through global form processing, a mechanism that helps the brain to detect visual information.

Also, while controls were highly sensitive to misalignments in pattern components—achieved by adding orientation jitter—ecstasy users showed little sensitivity to this form of pattern degradation.

Co-author and University of Western Australia School of Psychology Associate Professor Jason Bell says this reduced sensitivity was further evidence of poor global form processing in ecstasy users.

"Global form processing refers to our ability to process a pattern or shape as a whole, rather than simply as a collection of parts," A/Prof Bell says.

"It means, for instance, that a square is perceived as a singular shape, rather than as a meaningless collection of four corners.

"If global form processing is damaged or deficient then our speed and accuracy in recognising objects in the environment, and our ability to navigate amongst those objects, will be impaired."

Higher visual areas impaired

The current study tested an observer's ability to see a whole pattern in the brain's higher [visual areas](#)—areas that selectively process familiar visual patterns, shapes or objects including circles and faces.

Previous studies have shown that ecstasy use damages visual processing in the [primary visual cortex](#), although the exact mechanisms underlying this process are yet to be determined.

A/Prof Bell says a growing body of evidence suggests use of ecstasy

results in deficits in neurotransmitters such as serotonin, which innervate the visual cortex and are involved in a number of functions in primary visual areas.

"These higher visual areas are critical for recognising familiar shapes and objects," he says.

"Overall pattern sensitivity, as well as tolerance to pattern degradation, can be seen as markers for how efficiently an observer is able to globally process whole patterns."

Understanding the effect drug use has on the brain is important, A/Prof Bell says.

"We chose to focus on the effects of ecstasy in particular because of the prevalence of its use and because the short- and long-term consequences of its use are far from clear.

"Further research is needed to investigate this finding in a larger sample of heavy [ecstasy](#) users, and to differentiate the effects of other drugs."

More information: Claire White, Mark Edwards, John Brown, and Jason Bell. "The impact of recreational MDMA 'ecstasy' use on global form processing." *J Psychopharmacol* 0269881114546709, first published on August 20, 2014 [DOI: 10.1177/0269881114546709](https://doi.org/10.1177/0269881114546709)

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