

Psychology research: Women more sensitive to cocaine

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Linda Perrotti, professor and chair of the Department of Psychology at UTA and senior author of the study. Credit: University of Texas at Arlington

Previous studies focused on cocaine use have found that women are more likely than men to develop an addiction, try cocaine at a younger age, use larger amounts of the drug, and suffer from overdose.

Now, a new [study](#) from researchers at The University of Texas at Arlington in the journal *Pharmacology Biochemistry and Behavior* finally

validates what scientists have long suspected: The female sex hormone estradiol (a synthetic version of the naturally occurring estrogen) is responsible for why [women](#) are more susceptible to [cocaine addiction](#) than men.

"For the first time, we have shown that estradiol enhances the cocaine-conditioned reward," said Linda Perrotti, professor and chair of the Department of Psychology at UTA and senior author of the study. "Our research fills a significant gap in the knowledge of drug addiction, and it provides a crucial link to understanding how fluctuating [hormone levels](#) can cause females to be more sensitive to the rewarding effects of cocaine."

Co-authors include UTA student researchers Ross J. Armant, Blake N. Brady, Houda H. Chamseddine, Adam C. Hoch and Saubabh Kokane, and research technicians Brandon D. Butler, Clinton S. Coelho and Josimar Hernandez Antonio.

Using a well-established research technique called conditioned-place preference, researchers found higher levels of sensitivity among females that fluctuated depending on where they were in their reproductive cycles.

"In particular, we have now demonstrated that females have a higher sensitivity to the acute rewarding effects of cocaine in relation to where they were in their cycle," Perrotti said. "This research gives us a new understanding of how the brain reacts to cocaine, providing invaluable information on [cocaine use](#) and dependence in humans."

More information: Saurabh S. Kokane et al, Interactions between estradiol and ERK, but not mTOR, signaling is necessary for enhanced cocaine-induced conditioned place preference in female rats, *Pharmacology Biochemistry and Behavior* (2023). [DOI:](#)

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