

Mothers' teen cannabinoid exposure may increase response of offspring to opiate drugs

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Mothers who use marijuana as teens—long before having children—may put their future children at a higher risk of drug abuse, new research suggests.

Researchers in the Neuroscience and Reproductive Biology section at the Cummings School of Veterinary Medicine conducted a study to determine the transgenerational effects of cannabinoid exposure in adolescent female rats. For three days, adolescent rats were administered the cannabinoid receptor agonist WIN-55, 212-2, a drug that has similar effects in the brain as THC, the active ingredient in marijuana. After this brief exposure, they remained untreated until being mated in adulthood.

The male offspring of the female rats were then measured against a control group for a preference between chambers that were paired with either saline or morphine. The rats with mothers who had adolescent exposure to WIN-55,212-2 were significantly more likely to opt for the morphine-paired chamber than those with [mothers](#) who abstained. The results suggest that these animals had an increased preference for opiate drugs.

The study was published in the *Journal of Psychopharmacology* and funded by the National Institutes of Health.

"Our main interest lies in determining whether substances commonly used during adolescence can induce behavioral and neurochemical

changes that may then influence the development of future generations," said Research Assistant Professor John J. Byrnes, the study's lead author, "We acknowledge that we are using rodent models, which may not fully translate to the human condition. Nevertheless, the results suggest that maternal drug use, even prior to pregnancy, can impact future offspring."

Byrnes added that much research is needed before a definitive connection is made between adolescent drug use and possible effects on future children.

The study builds on earlier findings by the Tufts group, most notably a study published last year in *Behavioral Brain Research* by Assistant Professor Elizabeth Byrnes that morphine use as adolescent rats induces changes similar to those observed in the present study.

Other investigators in the field have previously reported that cannabinoid exposure during pregnancy (in both rats and humans) can affect offspring development, including impairment of cognitive function, and increased risk of depression and anxiety.

More information: Byrnes JJ, Johnson NL, Schenk ME, Byrnes EM. Cannabinoid exposure in adolescent female rats induces transgenerational effects on morphine conditioned place preference in male offspring [published online ahead of print April 15 2012]. *J Psychopharmacol*, 2012. [DOI: 10.1177/0269881112443745](https://doi.org/10.1177/0269881112443745)

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