

# Jonesing for java: Could caffeine use predict risk for cocaine abuse?

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Parents of young caffeine consumers take heed: that high-calorie energy drink or soda might present more than just obesity risk. In fact, according to a double-blind, placebo-controlled study that examined responses to stimulants, an individual's subjective response to caffeine may predict how he or she will respond to other stimulant drugs, possibly reflecting differences in risk for abuse of other more serious drugs of abuse, such as amphetamine and cocaine.

The new findings are reported in the November issue of the journal *Drug and Alcohol Dependence* by Stacey Sigmon, Ph.D., associate professor of psychiatry at the University of Vermont College of Medicine, a [drug abuse](#) researcher whose previous studies have looked at [caffeine withdrawal](#) and interactions between psychomotor stimulants and cigarette smoking.

"People differ dramatically in how they respond to drugs," says Sigmon. "For example, a single dose of a drug can produce completely opposite effects in two people, with one absolutely loving and the other hating the drug's effects. It is important to improve our understanding of these differences, as they may reflect key individual differences in vulnerability or resilience for drug abuse," adds Sigmon, who, with colleagues from Johns Hopkins University, examined how individual differences in response to [caffeine](#) might predict a person's subsequent response to d-amphetamine, a classic psychomotor stimulant with similar effects to other commonly-abused stimulants like cocaine.

Sigmon and coauthor Roland Griffiths, Ph.D., professor of psychiatry and behavioral sciences at the Johns Hopkins University School of Medicine, first employed a choice procedure (Phase 1) to identify participants as caffeine "Choosers" and "Nonchoosers" for the study. Choosers were those who chose caffeine over placebo in the majority ( $\geq 7$ ) of 10 choice sessions and Nonchoosers chose placebo over caffeine in the majority of choice sessions. There were no significant differences regarding pre-study caffeine intake or other characteristics between the two groups. During the second phase of the study, all participants received various doses of d-amphetamine and rated how much they liked or disliked each dose. The researchers found that caffeine Choosers reported significantly more positive subjective effects and fewer negative/unpleasant effects of d-amphetamine compared to Nonchoosers, particularly at the highest doses. On the other hand, caffeine Nonchoosers reported fewer positive effects and more unpleasant effects of d-amphetamine compared to Choosers.

According to Sigmon and Griffiths, the study is the first to demonstrate that caffeine reinforcement prospectively predicts the positive subjective effects of another drug.

"While these data do not mean that every coffee lover is at risk for proceeding to cocaine abuse," says Sigmon, "this study does show that individuals vary markedly in their subjective and behavioral response to psychomotor stimulants, and those for whom a modest caffeine dose serves as a reinforcer are the same folks who subsequently report more positive subjective effects of d-amphetamine. Future research will be important to examine whether caffeine reinforcement predicts vulnerability to reinforcement and abuse of classic psychomotor stimulants such as amphetamine and cocaine."

A total of 22 participants completed the study, which took place over a 10- to 14-week timeframe and was supported by funding from the

National Institute on Drug Abuse.

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