Caffeine Gives Boys a Stronger Rush Than Girls

But It Also Leads to a Preference for Junk Food, Research Shows

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Boys are stimulated more by caffeine than girls, according to new research, and both genders have a preference for junk food after being primed with caffeine, leaving scientists with tantalizing questions that they can't yet answer.

Does early exposure to caffeine predispose a person toward drug abuse? Is caffeine a contributor to the current obesity epidemic?

Scientists at the University at Buffalo are exploring an area that has not been studied much, probably because caffeine is the most widely used drug in the world, and it is thought to be largely benign. Various studies show that. But those studies involved adults, not children.

And it turns out that lots of kids consume prodigious amounts of caffeine, mostly in sodas, but even very young children are drinking coffee.

That began worrying neurobiologist Jennifer Temple six years ago when she switched from animal research to human studies.

How Much Is Known About Effects of Caffeine on Kids? Not Much, Researcher Says

"I was doing interviews with 8-to-12-year-old kids about what they had eaten that day, and a lot of these kids were drinking a lot of caffeine, and not just sodas," Temple said. "Some of the 12-year-olds were having coffee and lattes and I started to look in the literature about what we know about the effects of caffeine on kids. There was almost nothing there."

There's a fair amount more now because of a four-year research project by Temple and her colleagues at Buffalo. The research is supported by the National Institute of Drug Abuse.

The latest study to come out of that work was published in December's issue of Experimental and Clinical Psychopharmacolgy. In that carefully controlled study, boys experienced a greater rush and more energy from caffeine than girls.

Boys, but not girls, also thought the caffeine gave them a boost on the athletic field. Diastolic blood pressure increased in boys, but not girls, and pulse dropped to offset the rising blood pressure. This is believed to be the first time a gender difference in caffeine reaction has been documented among adolescents.

Research: Kids Who Drink Soda Tend to Have Poor Diets

And not all research indicates that caffeine is harmless, at least for children. Researchers at the University of Nebraska surveyed 200 children 5 to 12 years old and found that 75 percent consumed caffeine on a daily basis, and the more caffeine they consumed, the less they slept. That study, published last December, showed that the children consumed an average of nearly three 12-ounce cans of soda every day.

The Buffalo research reinforces other studies showing that children who drink sodas tend to have poor diets, and Temple said the correlation between caffeine and a preference for junk food is convincing.

In the latest study, 26 boys and 26 girls, age 12 to 17, took part in a series of experiments designed to

measure the effect of various levels of caffeine. The participants received a different dosage of caffeine each time, ranging from high to none, the latter serving as a placebo.

If Caffeine Conditions Kids' Reward Center Is it Predisposing Them Toward Drugs?

The bottom line: The more caffeine they consumed, the more calories they ate, including junk food. Of course, the sodas also had lots of sugar, so was it the caffeine or the sugar hit that caused them to turn to sweet foods?

Temple says she's confident it was the caffeine.

The researchers created novel drinks that their young participants had never tasted. Sometimes they added caffeine. Sometimes they didn't.

"The preliminary data suggests that when we create a novel flavor and pair it with caffeine it makes the kids like it more than if it's not paired with caffeine," she said, although that study is not quite finished. "When we add caffeine, they really like it."

The caffeine may be conditioning the kids reward center to long for stuff they really shouldn't eat, so is it predisposing them toward drugs that also tickle the reward center? Ah, that's a tough one to answer. The best evidence, she said, is in animal research.

"The animal data suggests that pre-exposure to caffeine does make animals more responsive to drugs when they are exposed to them later on," she said. "It primes the brain to respond more. The question is whether or not that translates to humans, and we don't know."

Males May Be More Susceptible to Priming Effect Than Females, Researcher Says

That's a lot easier to do with lab animals than with children. It would require a longitudinal study spanning at least a decade and involving a lot of kids to track the effect of precise levels of caffeine over a long period of time.

That would be very expensive, and more research must be completed before anyone is likely to come up with the funds for such a study.

There are some clues, however, that suggest Temple and her colleagues are on the right track. A number of studies have shown, for example, gender differences in drug abuse, and there is a clear gender difference in caffeine exposure in the Buffalo studies. The caffeine impact is more dramatic among young males than females, and adult males are more prone to drug abuse than females.

"It could be that males are more susceptible to the priming effect than are females," Temple said.

But she isn't sure at this point. And no one is suggesting here that caffeine is an underrated killer in the drug world. Scores of studies have found that it is relatively harmless, in reasonable doses, and it can even be helpful in a number of cases.

But for children? Not sure yet.