

# Stronger alcohol 'buzz' predicts future binge drinking problems

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For some people, alcohol is a social lubricant. For others, it's an unpleasant downer. New research shows that a person's response to alcohol can predict their future drinking behavior, including their frequency of binge drinking and the risk of developing an alcohol-use disorder.

Though often described as a depressant, [alcohol](#) produces a mix of stimulant and sedative effects that can vary from individual to individual. Psychiatrists have previously hypothesized that people who experience weaker alcohol effects are more likely to abuse the substance, known as the "low-level response theory."

But a new study published in [Archives of General Psychiatry](#) by University of Chicago researchers finds that [heavy drinkers](#) actually experience greater sensitivity to the rewarding and stimulating effects of alcohol, along with lower sedation. This "double whammy" of alcohol effects predicted those who progressed to more severe drinking and alcohol-use disorders over two years of follow-up, researchers discovered.

"The results change our thinking about how alcohol responses affect the development of an alcohol-use disorder," said Andrea King, PhD, professor of psychiatry and [behavioral neuroscience](#) at the University of Chicago and lead author of the study. "It's not just overall tolerance, but also sensitivity to alcohol's euphoric effects that increases risk for excessive drinking."

Binge drinking – defined as consuming more than 5 drinks (for men) or 4 drinks (for women) in two hours or less – is a frequent activity among college students and young adults. According to the Centers for Disease Control and Prevention, roughly 75 percent of the alcohol consumed in the United States is consumed during binge drinking episodes.

"Binge drinking is a problem in our society, especially in young adults, and it may lead to serious consequences over time" King said. "There has been little research examining how binge drinkers may respond differently to alcohol than regular social drinkers, and what may be the mechanism behind progression of hazardous drinking and loss of control over time."

The researchers recruited nearly 200 subjects between the ages of 21 and 35 and without alcohol dependence, divided into heavy drinker and light drinker groups. Heavy drinkers reported consuming 10-40 drinks on average per week, with at least one weekly binge episode. Light drinkers drank between 1 and 5 drinks on average per week and rarely binged.

The subjects were brought to a living room-like setting in the laboratory on three separate occasions and given one of three drinks: a placebo, a low dose of alcohol, or a high dose of alcohol, each disguised with flavored drink mix. Subjects were unaware of which drink they received – unaware, in fact, that the study was even testing the effects of alcohol – to reduce expectancy about the drug's effects. After finishing the drink, subjects filled out survey questions about how they were feeling and took regular breathalyzer tests for three hours.

While the light drinkers were more sensitive to the overall effect of the alcoholic drinks than heavy drinkers, how they described the experience was very different. Heavy drinkers reported more positive and rewarding effects, while light drinkers reported stronger sedation and sluggishness.

"They both had very similar blood alcohol concentration curves, but the effects of alcohol were markedly different," King said. "In other words, you can take a 150-pound male light drinker and a 150-pound male heavy drinker and give them each the exact same dose of alcohol, but their brains respond very differently to this substance, hence the divergent experiences and mood reports after consumption. It's really fascinating."

With the initial laboratory data collected, the researchers then followed their subjects for two years, asking them four times a year to report on past-month drinking behavior, including the number of times they had engaged in binge drinking behavior.

Over the 2 years, the heavy drinkers fell into four groups: those that reduced binge drinking ("gradual maturing"), those that maintained a moderate or high frequency of binge drinking, and those who increased binge drinking episodes ("exacerbating"). Subjects in the "exacerbating" group also drank more frequently and in higher quantities, suffered more alcohol-related consequences, and were more likely to qualify for a DSM-IV diagnosis of alcohol abuse or dependence.

By comparing long-term results with each subject's original response to alcohol in the laboratory tests, the researchers found that an individual's initial response could predict later drinking behavior. Subjects who exacerbated their binge drinking habits were more likely to have reported positive and stimulating effects of alcohol in the laboratory, even though they were unaware at the time of what they were drinking.

The study's results are interesting to alcohol researchers studying the basic question of why some people, but not others, drink heavily, said Henry Kranzler, MD, Professor of Psychiatry at the University of Pennsylvania and the Philadelphia VA Medical Center.

"Dr. King's findings support the theory that is not simply that heavy drinkers obtain less of an effect from alcohol and drink more to compensate, but that they seem to get 'more bang for the buck' and are thus more likely to seek those effects," Kranzler said.

Researchers are continuing to track the subjects to see if even longer-term patterns in drinking behavior can be predicted by the original test of their response to alcohol. In the meantime, they propose a revised theory of alcohol response that may impact how clinicians may spot and pre-empt unhealthy drinking habits.

"If we know more about who's going to become a problem drinker, we may be able to prevent future escalations and intervene earlier, before development of severe alcoholism," King said. "The stimulant-type responder could learn that while such a response pattern may not be their fault, it could put them at risk for longer-term problems and consequences."

Provided by University of Chicago Medical Center

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