

# Binge drinking affects attention and working memory in young university students

August 11 2009

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A new study looks at binge drinking's impact on attention and visual working memory processes in young Spanish university students. Results indicate that binge drinkers expend more attentional effort to complete a given task, and also have problems differentiating between relevant and irrelevant information.

Binge drinkers are defined as males who drink five or more standard [alcohol](#) drinks, and females who drink four or more, on one occasion and within a two-hour interval. A recent study of binge drinking's impact on attention and visual working memory processes in young Spanish university students has found that binge drinkers expend more attentional effort to complete a given task, and also have a deficiency in differentiating between relevant and irrelevant information.

Results will be published in the November issue of *Alcoholism: Clinical & Experimental Research* and are currently available at Early View.

"Currently, about 40 percent of university students in the U.S. are considered binge drinkers, while 12.2 percent of Spanish university students may be," explained Alberto Crego, a doctoral student at the University of Santiago de Compostela, Galicia, Spain and corresponding author for the study. "One of the reasons for this is because in Anglo-Saxon countries there is a longer tradition of drinking linked to weekend diversions and characterized by sporadic consumption of large quantities of [alcohol](#) in short periods. While in Mediterranean countries such as Spain, alcohol consumption is traditionally more regular and linked to

gastronomy."

However, the traditional pattern of drinking that is characterized by low intake of wine and beer may be changing, noted Francisco Caamaño-Isorna, a professor in the department of public health at the University of Santiago de Compostela. "Recent reports from the Spanish Drug Observatory suggest that the prevalence of binge drinking is increasing."

"One of the most relevant and worrying aspects of the high prevalence of intense consumption of alcohol in young people is the effect this drinking pattern probably has on the structure and function of the still developing brain, and that these consequences may persist in the long term," said Crego. "Some neuromaturation processes continue until approximately 25 years of age; this means that late developing regions are probably even more vulnerable targets."

Furthermore, he added, a binge-drinking pattern of abusive, intermittent consumption causes greater damage than consuming similar amounts of alcohol in a more continual, less intense pattern of drinking. "This cyclical pattern of alcohol consumption usually leading to drunkenness, and then abstinence - which includes the 'morning after' hangover - is similar to the pattern observed in chronic alcoholics, and their cycles of abuse/dependence and detoxification. Given that neurocognitive alterations tend to increase with the number of detoxification episodes, investigating possible neurocognitive consequences of binge drinking takes on even more importance."

Researchers used the event-related potential (ERP) technique to examine 95 first-year university students (48 men, 47 women), 42 of them binge drinkers (BD) and 53 "control" students (who did not drink enough to raise concerns); all of them 18 to 20 years of age. An ERP is the electrophysiological brain response to internal or external stimuli. Study authors paid particular attention to the N2 (negative waveform) and P3

(positive waveform) components of ERPs, known to be particularly sensitive to alcohol, that were elicited in response to a visual working memory task.

"We found that healthy young university students - meaning those with no alcohol-use disorder, alcohol dependence or associated psychiatric disorders - who engaged in binge drinking showed anomalies during the execution of a task involving visual working memory, despite correct execution of the task, in comparison with young non binge drinkers. They required greater attentional processing during the task in order to carry it out correctly."

These same students also had difficulties differentiating between relevant and irrelevant stimuli. "They displayed less efficiency in distributing attentional and working memory resources between the different information presented in a working memory task," said Crego. "These results collectively suggest that impaired brain function may occur at an early age in binge drinkers during attentional and working memory processing, even in young university students without alcohol-use disorders."

Crego cautioned that the attentional and working memory deficits exhibited by chronic alcoholics are indicative of the problems that may develop with binge drinking. "Healthy adolescents and young people who partake in intermittent consumption of large amounts of alcohol - otherwise known as [binge drinking](#) - even only once or twice a week, and who do not display chronic alcohol consumption or alcohol dependence may nonetheless suffer alterations at the electrophysiological level in attentional and [working memory](#) processing."

Source: Alcoholism: Clinical & Experimental Research

Citation: Binge drinking affects attention and working memory in young university students (2009, August 11) retrieved 25 April 2024 from <https://medicalxpress.com/news/2009-08-binge-affects-attention-memory-young.html>

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