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New Studies Shed Much-Needed Light on Alcohol-Induced Memory Blackouts

National survey studies suggest that roughly one in four college students who drink will experience a blackout in a given year, making blackouts a surprisingly common outcome of excessive drinking.

Blackouts are periods of amnesia, caused by excessive consumption of alcohol, during which a person actively engages in behaviors but the brain is unable to create memories for what transpires. This leaves holes in a person's memory that can range from spotty recall for the events of the previous night (known as fragmentary blackouts) to the utter absence of memory for large portions of an evening (known as en bloc blackouts).

Blackouts are very different from passing out, when a person falls asleep or is rendered unconscious from drinking too much. During blackouts, people can participate in events ranging from the mundane, like eating food, to the emotionally charged, like fights or intercourse, with little or no recall. According to Dr. Aaron White, Program Director for Underage and College Drinking Prevention Research at the National Institute of Alcohol Abuse and Alcoholism (NIAAA), "It can be quite difficult for an outside observer to tell if someone is in a blackout. The person could seem aware and articulate, but without any memory being recorded."

Dr. White found in a study he conducted in 2002 that half of the 800 college students surveyed experienced at least one alcohol-induced blackout, 40 percent experienced one in the previous year and nine percent reported a blackout in previous two weeks. In a 2009 study of 4,500 students about to enter their freshman year of college, Dr. White found 12 percent of males and females who drank in the previous two weeks experienced a blackout during that time.

In the first few months of 2012, three new studies were published about blackouts among college students. According to Dr. White, "We know that alcohol is capable of causing episodes of amnesia, but what takes place during those episodes, the consequences that follow and why some people are more susceptible to them than others are still unclear. That is why these recent studies are so important."

Dr. Marlon Mundt and colleagues at the University of Wisconsin School of Medicine and Public Health recently published two papers on blackouts. In the first study, they observed that college students who black out are more likely to experience alcohol-related injuries than those who do not. Those reporting a history of six or more blackouts at the beginning of the study were more than 2.5 times more likely to be injured in an alcohol-related event over the next two years. The second study estimated that emergency department costs due to injuries sustained during blackouts could total $500,000 or more per year on large campuses.

A study by Dr. Reagan Weatherill at the University of California, San Diego, and colleagues from the University of Texas, Austin, provides important insight into why some people are more likely to experience blackouts than others. Compared to subjects without a history of blackouts, those with a history of blackouts exhibited a significant decline in activity in the frontal lobe of the brain, measured using fMRI, during the completion of a memory task while intoxicated. The findings suggest that some people are more likely to experience alcohol-induced blackouts than others due to the way alcohol affects brain activity in areas involved in attention and memory. Dr. White adds that studies of twins have pointed to a genetic vulnerability to blackouts–if one twin tends to black out, so does the other one.

The way college students drink increases the odds of blackouts, says Dr. White. "Alcohol is more likely to cause a blackout when it gets into your body, and therefore your brain, fast. It catches the memory circuits off guard and shuts them down. Doing shots or chugging beer, and doing it on an empty stomach, gets the alcohol into your bloodstream quickly."

He also notes that females are at particular risk for blackouts. They tend to weigh less than males and have less water in their bodies for the alcohol to get diluted into, which leads to higher levels of alcohol in the brain, he explains. They also have less of an enzyme called alcohol dehydrogenase in the gut that breaks down a small percentage of alcohol before it even gets into body. Females also are more likely to skip meals to save calories when they drink, so there is less food in the stomach to help absorb the alcohol. They are also more likely to drink beverages with higher alcohol concentrations, like wine and mixed drinks rather than beer.

In order to avoid blackouts, Dr. White advises drinkers not only to limit the total amount they consume, but to pace themselves, add in non-alcoholic beverages and eat food while they're drinking. For more about safe drinking limits he refers readers to the NIAAA

website, Rethinking Drinking.

To learn more about Underage and College Drinking, click here.