The Role of Alcohol and Alcohol-induced Blackout Amnesia

In People v. Brock Allen Turner

Alcohol Use and Abuse on College and University Campuses

A core issue associated with the Brock Turner case is the rampant use and abuse of alcohol on college and university campuses. According to the National Institute on Alcohol Abuse and Alcoholism, a college freshman's first six weeks of college life, in particular, stand out as a time of harmful alcohol intake and its resultant undesirable effects and events. This is because of "…students' expectations and social pressures at the start of the academic year."[1] Studies show that approximately 50% of student sexual assaults involved alcohol. Of these, 46% of the victims had ingested alcohol, as did 69% of the perpetrators.[2]

Fraternity parties are high-risk settings for alcohol overindulgence and ensuing sexual assaults. According to researcher A. Abbey, Ph.D., "The peer norms for most fraternity parties are to drink heavily, to act in an uninhibited manner and engage in casual sex."[3] The scene at the Kappa Alpha party, the fraternity at which Doe and Turner were in attendance, had ample beer and hard liquor for anyone who wanted it, including those under the legal drinking age. Based on Dr. Abbey's aforementioned research findings, the Stanford Kappa Alpha fraternity party was a likely setting for drunken sexual encounters to occur.

Alcohol-induced Blackout Amnesia

According to court documents, Emily Doe had a history of alcohol-induced blackout amnesia. Alcohol-induced blackout, a form of anterograde amnesia, is typically experienced during binge drinking when an individual's blood alcohol concentration (BAC) quickly rises to approximately 0.14 g/dL (0.14%) or higher through consumption of a high quantity of alcohol in a short amount of time. BAC is defined as the amount of alcohol (in grams) in 100 ml of blood.

For example, if a drinker has a BAC of 0.10% or 0.10 g/dL, the drinker has 10 grams of alcohol in 100 ml of her/his blood, or one part per 1000 parts blood. Approximately 50% of drinkers have reported experiencing alcohol-induced blackout.[4] Binge drinking is defined as four or more standard drinks in two hours for women, and five or more standard drinks in two hours for men.[5] In their research, authors Wilhite, Mallard, and Fromme conclude, "It may be that individuals who are predisposed to alcohol-related blackouts engage in riskier, unplanned behavior while drinking, potentially a result of neural differences related to inhibitory processing."[6] The researchers also found that "…women who experienced blackouts were at much greater risk of sexual risk-taking behaviors, including unplanned sexual behavior, relative to those without a blackout history."[7]

In blackout amnesia, the individual can have the appearance of consciousness; for example, the drinker can makes decisions, engage in conversation, and can even drive a car (illegally)—but will have no memory (en bloc), or only partial memory (fragmentary), of what occurred during the period of blackout. Because cognitive and memory impairment takes place before impairment of motor function, a drinker can appear alert and functional, but experience little or no memory formation. Of relevance is that, according to Boston University School of Public Health chair and alcohol researcher Dr. Richard Saitz, "A blackout is when you don't remember what happened. You can appear to be completely awake. An observer can't tell when someone is in the midst of not forming a memory."[8] This is relevant because Turner would not have known if or when Emily Doe was in blackout, as she would have appeared functional.

Blackout can place drinkers at serious risks for motor vehicle accidents while driving, alcohol poisoning, falls, sexual assault, kidnapping, harming others, a multitude of other hazards,

and even death. Blackout can result in uninhibited sexual behavior. Alcohol-induced blackout is not to be confused with non-alcoholic blackout (transient loss of conscious) such as syncope (fainting) due to sudden lack of blood circulation to the brain, abnormal electrical brain activity such as epileptic seizure, or psychogenic blackout due to stress, anxiety, or other psychogenic disorders.[9]

Based on the physiological effects and capabilities a drinker can experience during alcohol-induced blackout, Emily Doe's state of blackout during her encounter with Turner can make the case that Turner believed Doe was coherent and provided consent, then during sexual activity Doe gradually slipped into a state of alcoholic stupor as her BAC continued to rise. A drinker's BAC can continue to rise up to approximately two hours after ingestion of the last drink. Turner may not have noticed if or when--during their consensual sexual foreplay--Doe progressed from consciousness to her ultimate state of stupor. Turner himself was mentally impaired due to alcohol intoxication.

Normal memory formation, which occurs largely in the hippocampus, is a process of transfer encoding of short-term memory into a process of long-term memory. To recall a memory, the memory is retrieved from long-term memory storage and placed again into short-term memory, at which time the memory is re-experienced, and then returned to long-term memory storage.[10] During blackout, alcohol inhibits the normal process of transfer encoding of short-term memory into long-term memory storage, resulting in partial or complete lack of memory formation.

In California, a drinker is legally intoxicated when a BAC reaches 0.08% or higher. Emily Doe's extrapolated BAC at the time she was found by witnesses was approximated by Alice King, Santa Clara County supervising criminologist, to be 0.242 to 0.249%--about three

times the legal limit.[11] Because the intravenous fluids Doe had received through ambulance and hospital treatments were not included in calculating her extrapolated BAC, Doe's actual BAC when she was found by witnesses was likely much higher than the reported 0.242 – 0.249%. Turner's BAC, extrapolated to estimate the time Turner and Doe were found by witnesses, was 0.171%.

Table 1. BAC-Specific Effects[12]

BAC Level	Generalized Dose Specific Effects
0.160-0.199%	Dysphoria predominates, nausea may appear. The drinker has the appearance of a sloppy drunk. [Possible blackout.]
0.200-0.249%	Needs assistance in walking; total mental confusion. Dysphoria with nausea and vomiting; possible blackout.
0.250-0.399%	Alcohol poisoning. Loss of consciousness.
0.400% +	Onset of coma, possible death due to respiratory arrest.

Even after a drinker has stopped drinking alcohol, the drinker's BAC can continue to rise after the last drink for up to two hours. This is because alcohol continues to circulate in the body while it awaits detoxification by the liver. The liver can typically detoxify one standard drink per hour. A standard drink is 12 ounces of beer, or five ounces of table wine, or 1.5 ounces of distilled spirits (e.g., vodka, gin, whiskey, etc.).[13]

Prepartying drinking can be a significant precursor to blackout. Emily Doe had consumed four shots of whisky and champagne at home before attending the Stanford fraternity party. According to LaBrie et al., "…the current findings showing that drinking shots of liquor when prepartying increases the likelihood of blacking out hold particular relevance for women's health and well-being."[14] The typical intent of prepartying drinking is to "…create a 'buzz' or level of inebriation that will heighten enjoyment of the event and possibly endure through the event or

until more alcohol can be obtained."[15] This aligns with Emily Doe's statement to police that after drinking four shots of whiskey at home before attending the Stanford fraternity party, "She felt kind of buzzed but was coherent and able to function."[16]

The physiological process of alcohol detoxification explains how Emily Doe could have been in en bloc blackout (appeared alert, capable of performing tasks, but no memories formed) while consensually engaging in sexual activity with Turner, gradually became stuporous even after she had stopped drinking, and then had no later memory of what had transpired during blackout, including whether she had given consent. Turner would not have known Emily Doe had been in blackout. The likelihood of blackout created reasonable doubt.

Blacking Out the Evidence of Alcohol-induced Blackout

The prosecution argued that the defense expert witness testimony on alcohol-induced blackout should be withheld from the jurors (via the motions in limine) because "it has not been established that alcoholic blackouts are generally accepted in the scientific community," and blackout phenomenology should be excluded "because its probative value, if any, is far outweighed by its prejudicial effect of misleading a jury and confuse [sic] the issues.[17]

Contrary to the prosecution's belief that alcoholic blackout is not accepted by the scientific community, formal scientific research of alcohol-induced blackout began as early as the 1940s by E.M. Jellinek, and numerous scientific studies describing alcohol-induced blackout can be found in scientific journals and other medical and scientific sources. For example, in the *Journal of Addiction Medicine*, blackout researchers Rose and Grant write, "Cognitive and memory impairment occurs before motor impairment, possibly explaining how a drinker appearing fully functional can have little subsequent memory."[18] In *Frontiers in Psychology*, a respected trade journal that publishes rigorously peer-reviewed psychology research, researchers

D. Hermens and L. Lagopoulos state in their article, "Binge Drinking and the Young Brain: A Mini Review of the Neurobiological Underpinnings of Alcohol-Induced Blackout," that alcohol-induced blackout "leads to a failure in forming new explicit memories (i.e., facts and events). Such anterograde amnesia occurs despite the subject continuing to participate in events (e.g., holding a conversation) that they will not remember later."[19]

In 2011, neuroscientists at Washington University School of Medicine identified the process of alcohol-induced blackout at the cellular level. It was discovered that a large quantity of alcohol consumption interferes with certain brain receptors, resulting in the production of steroids that inhibit long-term potentiation (a process that strengthens the connections between two neurons), ultimately interfering with synaptic plasticity in the brain's hippocampus and inhibiting memory formation. Interestingly, 5-alpha reductase inhibitors such as Proscar, an oral prescription medication for the treatment of enlarged prostate, can help prevent the formation of new steroid hormones and augment hippocampal glutamate neurotransmission, thereby promoting memory preservation in the presence of excessive alcohol.[20] [21]

Prosecutor Kianerci made multiple statements against blackout expert witness Dr. Kim Fromme in an effort to discredit and prevent Dr. Fromme's testimony. For example, Kianerci opines, "Much of Dr. Fromme's opinion as documented in her report about the specifics in this case, is based on assumptions, speculation, and conjecture."[22] Kianerci continues, "Dr. Fromme merely aims to attack the credibility of this sexual assault victim with absolutely no basis for coming to the medical opinion that she was suffering from an alcohol induced blackout and she engages in rank speculating that she 'possibly' could have consented …"[23]

In stark contrast to Ms. Kianerci's cynicism regarding Dr. Fromme's expertise on the subject of alcohol-induced blackout, Dr. Fromme is a highly respected Professor of Clinical

Psychology at the University of Texas at Austin, and an esteemed researcher in the field of alcohol studies. "In addition to publishing over 100 peer-reviewed studies in top-tier scientific journals, Fromme has served on high-profile research boards, received millions of dollars in funding from government agencies, and was one of seven scientists in the country picked to serve as advisory counsel to the National Institutes of Health."[24] In 2019, Dr. Fromme received the Award for Distinguished Scientific Contributions, APA Division 50 (Addictions).[25] Prosecutor Kianerci's attempt to exclude Dr. Fromme's testimony via motions in limine failed, and subsequently led to a Daubert hearing; Dr. Fromme's expert testimony was allowed to be heard by the jury. Prosecutor Kianerci's arguments to refute Dr. Fromme's expert testimony had no scientific or rational bases.

Emily Doe herself has acknowledged experiencing alcohol-induced blackouts at previous parties. In fact, she testified in court that she had experienced "four to five" episodes of blackout while in college.[26] In the police report, Officer DeVlugt states Emily Doe "…described blackout to be where she is still functioning, but not remembering. She usually makes it home even when she blacks out."[27] Doe told police that, "She has blacked out before from drinking, but only when she has been continually drinking for a long time, and it is usually at the end of the night when it happens."[28] Of course, this is similar to what had occurred at the Stanford fraternity party; starting sometime between 10:00 PM and 10:30 PM, Doe drank four shots of whiskey and champagne at home (prepartying drinking), and continued to drink after arriving at the party. Less than two hours later, witnesses and first responders found Doe in a state of alcoholic stupor. Doe further refers to her experience of alcohol-induced blackout when she states in her Victim Impact Statement, "That's when I learned I had called him [boyfriend] that night in my blackout."[29]

The evidence shows that Emily Doe's self-described alcohol-induced state of blackout did indeed play a major role in her sexual encounter with Brock Turner. There is a likelihood that Emily Doe could have consented to sexual activity with Brock Turner while she was in a state of en bloc alcohol-induced blackout. Of course, Emily Doe cannot remember.

ENDNOTES

[1] https://www.niaaa.nih.gov/publications/brochures-and-fact-sheets/time-for-parents-discuss-risks-college-drinking Accessed 8-1-2019.

[2] https://www.alcohol.org/effects/sexual-assault-college-campus/

[3] A. Abbey, "Alcohol-Related Sexual Assault: A Common Problem Among College Students." Department of Community Medicine, Wayne State University.

[4] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4844761/

[5] https://www.alcohol.org/effects/dangers-of-blackouts/

[6] Wilhite, E.R., Mallard, T, Fromme, K, "A Longitudinal Event-Level Investigation of Alcohol Intoxication, Alcohol-Related Blackouts, Childhood Sexual Abuse, and Sexual Victimization among College Students." https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5957776/

[7] IBID

[8] https://www.wbur.org/commonhealth/2018/10/03/kavanaugh-ford-drinking-blackout

[9] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1860900/

[10] https://www.alcohol.org/effects/dangers-of-blackouts/

[11] https://www.stanforddaily.com/2016/03/21/brock-turner-trial-continues-in-second-week-of-testimony/

[12] https://mcwell.nd.edu/your-well-being/physical-well-being/alcohol/blood-alcohol-concentration/

[13] https://www.niaaa.nih.gov/alcohol-health/overview-alcohol-consumption/what-standard-drink

[14] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4329777/

[15] IBID

[16] People v. Brock Allen Turner, Police report (PR 030).

[17] "People of the State of California, Plaintiff, vs. Brock Allen Turner, Defendant, People's Motions in Limine." March 9, 2016.

[18] Rose, Mark & Grant, Jon., "Alcohol-Induced Blackout Phenomenology, Biological Basis, and Gender Differences." *Journal of Addiction Medicine*. 4 (2):61-73, 6/2010.

[19] Hermens, D, and Lagopoulos, J. "Binge Drinking and the Young Brain: A Mini Review of the Neurological Underpinnings of Alcohol-Induced Blackout*." Frontiers in Psychology*. 2018; 9:12.

[20] https://source.wustl.edu/2011/07/the-biology-behind-alcoholinduced-blackouts/

[21] https://www.jneurosci.org/content/31/27/9905

[22] People v. Brock Allen Turner; Motions in Limine.

[23] People v. Brock Allen Turner, Motions in Limine

[24] https://www.buzzfeednews.com/article/katiejmbaker/meet-the-expert-witness-who-says-sex-in-a-blackout-isnt

[25] https://addictionpsychology.org/awards/list-recipients

[26] https://www.stanforddaily.com/2016/03/21/brock-turner-trial-continues-in-second-week-of-testimony/

[27] People v. Brock Allen Turner, Police report (PR 045).

[28] People v. Brock Allen Turner.

[29] People v. Brock Allen Turner, Victim Impact Statement.