UNDERSTANDING 'BLACKOUT' DRINKING AMONG YOUNG ADULTS VIA TWITTER

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**Abstract**

This study sought to understand when, where, and with whom adolescents and young adults are engaging in excessive alcohol consumption, often referred to as "blackout drinking". This form of risky drinking is most prevalent among young adults and is associated with numerous consequences including alcohol-induced memory loss, negative sexual encounters, drug use, and alcohol poisoning. It is important to understand the factors that influence this behavior to develop appropriate prevention and intervention strategies. The social context of a drinking event including where and under what circumstances drinking occurs is associated with levels of alcohol consumption. Furthermore, it is known that young adults use social media to regularly communicate about their behavior. Thus, this study systematically examined what people described about the social context of drinking on Twitter.

This study utilized 10,000 randomly sampled Twitter messages or "tweets" related to blackout drinking. Tweets were collected based on key word search criteria such as "blackout", "blacked out" and "binge drinking". We then conducted a content analysis of the tweets on coding factors related to social context such as location, size of gathering, event, drug use, type of alcohol consumed, any age references, who purchased the alcohol, the relationship of others present, and the drinking behavior of others present.

Results suggested that type of alcohol consumed, location, and relationship of those present were the most relevant factors in portraying blackout drinking. These factors reflect important determinants of alcohol use including alcohol branding and marketing and represent important targets for prevention.

**Keywords:** adolescence, young adults, high-intensity drinking, Twitter, social context of alcohol use, content analysis

**Introduction**

*Prevalence and consequences of HID among young adults*

Alcohol is the most commonly used substance in the United States for people between the ages of 18-24 (Miech et al., 2016) which is a population comprised of those in college, recently graduated, and out of college. Research has shown that this age group consumes alcohol at higher levels than other age demographics (Smith et al., 2019). Recently, there has been an increase in the prevalence of high-intensity drinking (HID), or consuming alcohol at two or more times the standard binge drinking threshold of four drinks for women and five drinks for men in a drinking episode (Cox et al., 2019). Prevalence of high-intensity drinking peaks during young adulthood at age 21. Young adults are most likely to engage in this behavior and therefore at greater risk for the consequences of excessive alcohol consumption.

HID poses serious acute and chronic consequences including alcohol induced memory loss (i.e. blacking out), alcohol poisoning, or even death. Alcohol poisoning may result in the individual passing out, vomiting, and potentially death (Ryback, 1970). Alcohol poisoning is especially common in youth who are drinking because they may not know their limits and continue to drink even during a blackout episode (Ryback, 1970). Risk for unintentional injury, drug use, aggressive behavior and risky sexual encounters increase due to high-intensity drinking (Mundt et al, 2009; Hingson, Zha & White, 2017). Thus, HID represents an important behavior to better understand to inform adequate prevention and intervention.

*Role of the drinking context on alcohol use among young adults*

The social context of a drinking episode can impact the amount of alcohol an individual consumes and the safety of the situation. It is important to consider when, where, and with whom a person is consuming alcohol. The social-ecological model can be used to explain how the drinking context can be used to predict the outcomes of a drinking situation. As shown in Figure

1, there are many factors within the drinking context that can impact the amount of alcohol consumed, consequences experienced, and safety of the drinking situation. Situational, social, and location characteristics can all play a role in shaping drinking behavior (Friesthler et al., 2014). Situational factors reflect elements that change from one event to the next, such as availability of alcohol or supervision. Social factors represent attributes of the people present at the drinking event. For example, it is known that peers can influence how much someone may drink, which could lead to an increased risk for drinking at a high-intensity level (Smith et al., 2019). Drinking episodes occur in multiple locations, such as a club, restaurant, or home setting. All of these factors play a role in the drinking situation and can influence the rate of HID that is occurring.

Drinking settings for this age group are most commonly in private homes for adolescents (Cox et al., 2019) as well as bars and clubs for young adults (Rodriguez et al., 2016). Among adolescents drinking at home, there may or may not have parents supervising the group, but if parents are present, the binge drinking risk tends to go down (Cox et al., 2019). Since underage drinkers can't purchase alcohol on their own, they may either be supplied it through their parents or another source who is of age. Some states have laws that hold parents responsible if underage drinking goes on in their homes and that can be a deterrent for parents allowing these parties to happen (Cox et al., 2019). For those of the legal drinking age or those who allowed in places where alcohol is sold, locations with lower prices on alcohol, for example, increase risk for excessive drinking (Chaloupka & Wechsler, 1996). Larger events also add to the likelihood that high intensity drinking will occur. Who is around when drinking occurs can change the situation from a casual party to one that can become dangerous as high intensity drinking takes place.

Figure 1. Characteristics of the Drinking Context
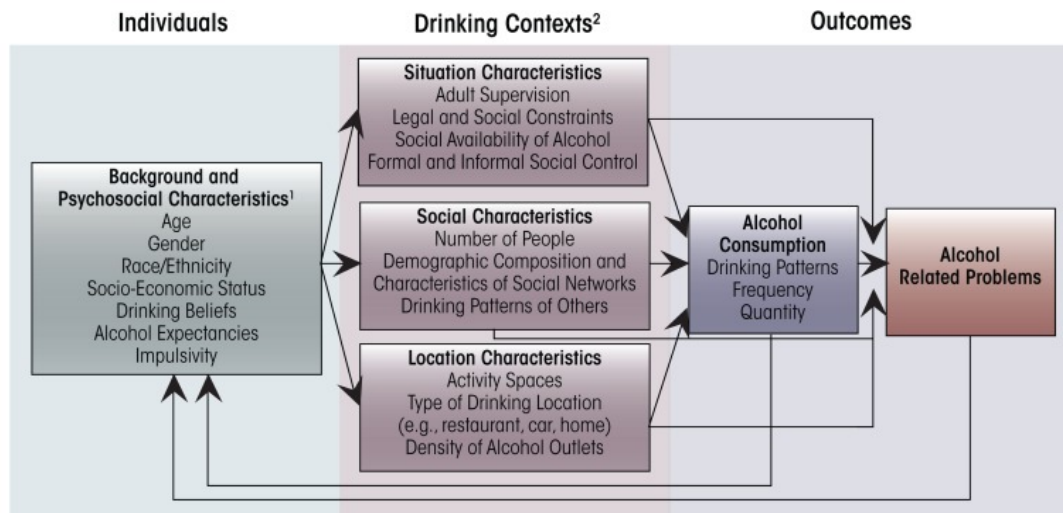


*Use of Twitter in relation to alcohol use*

Social media plays an important role in an individual's perception of drinking. It is estimated that 40 percent of people aged 18-29 actively use Twitter on a daily basis (Pew Research Center, 2018). People make tweets of 280 characters or less and then those can be retweeted (shared) to reach an even larger audience than just the user's followers. Alcohol and related behaviors are often discussed on social media and because of the age group that most commonly uses Twitter, alcohol related tweets are very common. Not only is Twitter readily accessed by youth and young adults, it is a social media platform to study alcohol use as publicly available messages can be downloaded via systematic searches.

*Current study*

The current study examined when, where, and with whom a person is engaging in high-intensity drinking. Based on previous research, young adults use the term 'blackout drinking' to reference drinking at the scale of high-intensity drinking. Thus, for this study, the keywords are "blacked out" "black out" and possibly "binge drinking". Following a systematic retrieval of

Twitter messages based on relevant coding, all messages were analyzed to determine which ones are actually referencing drinking, and then coded based on the drinking context.

**Methods**

*Procedures*

The data for this study were collected using Application Program Interface (API) software to acquire messages that are publicly available on Twitter. Messages on Twitter ("tweets") were gathered using keywords selected by the research team. Specifically, in this study, we used the following keywords: "blackout", "blacked out", and "binge drinking". The API limits the number of tweets that can be collected, and the maximum is 18,000 tweets every 15 minutes (Riordan et al., 2019). A third party extracted 10,000 randomly sampled Twitter messages that met the search criteria between Jan 1, 2019 and November 27, 2019. Re-tweets (i.e. not original content but rather reposting someone else's message) and non-English language tweets were excluded in the search as well. 425 tweets were excluded because they either contained information unrelated to drinking alcohol or they were flagged for spam.

*Measures*

- Location: Where the drinking situation took place (e.g. house, bar, or club).

- Size: the amount of people present in the drinking situation.

- Who purchased: Who provided the alcohol to the individual writing the tweet.

- Relationship of people present: How the people in the drinking situation are connected (e.g. friends or family members).

- Drinking behavior of others: Extent to which others are consuming alcohol.

- Drug use: Any use of prescribed or illicit drugs during the drinking situation.

- Event: The reason for the drinking situation. Possible events could include weddings, birthday parties, or family get togethers.

- Type of alcohol: What kind or brand of alcohol the person is consuming (e.g. vodka, Budweiser).

- Age reference: Any reference to their age such as being underage, or older than 21.

*Data Analysis*

A coding system was used based on the measures described above to sort the tweets after they were retrieved (Riordan, 2019). All messages were independently coded by two researchers. To begin, each researcher coded 250 messages which were then compared to ensure that everyone is coding based on the same system and the results are reliable. Following this initial coding, all messages were coded by the two researchers. Inter-rater reliability between the two coders (Krippendorf's alpha=.91) was high indicating consistent coding. Following coding, narrative summaries of results and counts of tweets were synthesized for each coding category.

**Results**

In total, 9585 Twitter messages were coded based on measures of drinking context. Table 1 depicts the number of tweets coded for each construct as well as a descriptive summary of results for that construct. Results for each construct are presented below.

*Location:* This construct focused on the places that people were engaging in blackout drinking. The most common places stated were bars or clubs, restaurants, and private homes. 206 tweets were coded relating to the location of the drinking behavior occurred.

*Size:* This construct was related to the amount of people at a gathering where blackout drinking was occurring. There were 0 tweets coded relating to this construct.

*Relationship of people present*: This construct analyzed who was present when individuals were engaging in blackout drinking. Most commonly, people were drinking heavily with friends or family members. According to the tweets, the people present may have had a role in encouraging people to drink more or be the reason they were even drinking in the first place. 270 tweets were coded relating to the relationship of the people present.

*Drinking behavior of others*: This construct relays information about the extent to which the other people present are drinking. This may include other people, such as friends or family, engaging in alcohol use. 86 tweets were coded about the drinking behavior of others.

*Who purchased:* This construct categorizes the tweets related to someone actually purchasing the alcohol. There were 15 tweets coded relating to this construct. In most of them, the person writing the tweet purchased their own alcohol. Only one tweet talked about having a roommate purchase their alcohol.

*Drug use*: This construct focuses on the use of drugs while engaging in blackout drinking. There were 249 tweets coded relating to this topic. The most common drug used was marijuana. Other drugs mentioned include cocaine, mushrooms, Xanax, and Molly (i.e. MDMA/ecstasy).

*Event*: This construct relates to the type of event people were at when they engaged in blackout drinking. These events included birthday parties, weddings, sporting events, and holidays. Some tweets mentioned engaging in this type of drinking because a particular sports team won or lost. There were 472 tweets coded for this construct.

*Type of alcohol:* This construct categorizes tweets based on the type of alcohol people are drinking when they engage in HID. The most common types of alcohol mentioned were tequila,

wine, beer, vodka, as well as specific brands such as Four Loko and White Claws. This construct

had the most tweets coded for it; there were 1136 tweets coded for this topic.

*Age reference:* This construct focuses on the age people were when they were engaging

in blackout drinking. They may not have listed specific ages, just a time period in their lives such

as high school. The most common age referenced was 21, as people were preparing to be able to

drink legally. The next most common was a reference to drinking underage. Some of the tweets

said a specific age while others just referenced drinking in high school. Also, there were tweets

related to being 25 and over, as they were realizing that they could not drink like they used to.

There were 150 tweets coded for this construct.

Table 1: Summary of results

| Construct | #/Count mentioned | Narrative Summary with representative quotes |
|---|---|---|
| Location | 206 | Summary: Bars and restaurants, specific cities (Las Vegas), friend's houses<br><br>Representative tweets:<br>"I'm going to Las Vegas tonight and I hope I get so blackout drunk that I don't even remember going"<br>"I am done drinking i reallt can't believe that i blacked out on a tuesday night at an applebee's"<br>"Last super bowl I was black out drunk at Craig and Antonio's house" |
| Size | 0 | |
| Relationship people present | 270 | Summary: Friends or family<br><br>Representative tweets:<br>"black out drunk and my uncles are also black out drunk but they're singing"<br>"I have a friend that acts like a toddler when drunk and it's always a trip taking care of her 😂 she almost drowned because she wanted to get in my hot tub black out drunk." |
| Drinking behavior of others | 86 | Summary: Other people engaging in alcohol use<br><br>Representative tweets:<br>"Being completely sober while taking care of your black out drunk friend was so much harder and irritating than i thought"<br>"Charles is gonna binge drink tonight" |
| Who purchased | 15 | Summary: The person making the tweet, their roommate<br><br>Representative tweets:<br>"i wanna buy a bottle and black out"<br>"My roommate brought patron I'm fasho getting black out drunk" |

| Drug use | 249 | Summary: Marijuana, xanax, various other drugs<br><br>Representative tweets:<br>"i drank some booze i'm gunna smoke weed and try and black out"<br>"I blacked out and ate 10 Xanax bars last night. I simply cannot handle benzodiazepines."<br>"I blacked out and completely forgot I took some shrooms last night" |
|---|---|---|
| Event | 472 | Summary: Birthday parties, weddings, sporting events, holidays<br><br>Representative tweets:<br>"FSU won I'm gonna black out brb"<br>"@SwoopSoup happy birthday you're now legally allowed to get black out drunk"<br>"I haven't been the same since I blacked out at Sandra and Antwan's wedding 😭😭😭"<br>"All I plan on doing Halloween is drinking and watching scary movies all day till I black out :-)" |
| Type of alcohol | 1136 | Summary: Beer, vodka, tequila, wine, various other types of alcohol<br><br>Representative tweets:<br>"One minute I'm having a vodka cranberry, the next I'm blacked out. College, I guess I wasn't ready for you again"<br>"This was a premonition because I did drink str8 up tequila hours later and blacked out"<br>"Once this test is over I'm drinking 3 bottles of wine and blacking out"<br>"I rlly blacked out after 3 beers I do not know how to drink"<br>"I hate Hennessy bc it tastes good asf and I won't stop drinking till I black out " |
| Age | 150 | Summary: 21$^{st}$ birthday parties, drinking underage, being over 25<br><br>Representative tweets:<br>"@ashleybrowne9 drinking at 25 is more like: i had a sip and a half of a beer and blacked out"<br>"On my 21st Birthday I'm getting so drunk I'm blacking out 😭"<br>"Bruh i was getting black out drunk at 14" |

**Discussion**

This study sought to understand when, where, and with whom individuals engage in high intensity drinking based on their publicly reported information via social media. The data was collected using publicly available tweets from Twitter based on certain key words.

Overall, this study determined that users are talking about blackout drinking online and on public platforms such as Twitter. The most common reference in the tweets was related to the type of alcohol the person was consuming. Most of the tweets were related to liquor, with beer and wine also being stated in a considerable portion of tweets. Another piece of information commonly found in the tweets was related to the event or cause of the person's drinking. Many

people were drinking because they were at a birthday party, wedding, or other holiday gathering. However, a considerable amount of people were drinking because a particular sports team won or lost. The relationship of people present also seemed to play a role in the person engaging in blackout drinking as well. Very few tweets mentioned the person drinking on their own, they were usually in a social setting. The most common group for a person to be with was their friends or family. Location and drug use were also commonly discussed as people were engaging in this form of drinking. Many people were drinking in bars or restaurants, as well as club settings. Much of the drug use mentioned involved marijuana and cocaine. Xanax and other prescription medications were also mentioned. Many people discussed their age in tweets about blackout drinking as well. They either mentioned a time when they were underage and drinking or tweeted about someone else or themselves turning 21. Other tweets mentioned the drinking behavior of those around them while they were engaging in HID.

The most common aspect of drinking that was stated in the Twitter messages was the type of alcohol being consumed. The strong association between drinking and the type or brand of alcohol consumed is an important factor to address in prevention efforts to reduce high-intensity drinking among youth and young adults. Alcohol marketing and branding plays a major role in adolescents' and young adults' desire to drink. Often these ads are targeted towards them, showing drinking as way to increase social satisfaction (Jackson et al., 2019). There are very little restrictions on alcohol advertising when compared to tobacco, which is heavily regulated when it comes to marketing towards youth and adolescents. Outside of the usual commercials, many TV shows and movies that adolescents view contain alcohol imagery. These advertisements often only show the positive effects of alcohol usage but not the negative (Jackson et al., 2019). When alcohol is shown in TV and movies, it can appear as normal for

their age group. This can influence young people to want to drink, even if they previously did not want to engage in that behavior. Previous research demonstrated that adolescents are exposed to at least three alcohol advertisements each day (Collins et al., 2016), which only compound over longer durations of time (Sharf et al., 2013). While most alcohol advertising in the past was on television, in our ever-increasing digital world, individuals are exposed to the advertising on multiple different mobile platforms which increases exposure and therefore heightens risk for negative effects on alcohol use behaviors (Jackson et al., 2019).

Another significant factor of the drinking context that was evident in this study were events that people attended where alcohol was present. There are many events that people go to where they may choose to drink alcohol. According to the tweets collected for this research, these can include birthday parties, holidays, weddings, and other social gatherings. These specific events have been shown to be associated with amount of alcohol consumed. For example, previous research found that 21st birthdays are the occasion where it is most common to see excessive drinking occurring among young adults (Neighbors et al., 2011). Participants reported having negative effects from alcohol, such as vomiting, as well as consuming more alcohol than they had originally intended during these events. Other holidays that reported high levels of drinking included Halloween, New Year's Eve, and spring break (Neighbors et al., 2011). However, the amount of alcohol consumed on these holidays was much less when compared to 21st birthday celebrations. Our study found that 21st birthdays were one of the events with the highest number of tweets relating to it.

Who someone is with when they consume alcohol can influence the amount that a person will drink. Studies have found that the amount of alcohol consumed by one's peer group is associated with an individual's personal consumption (Smith et al., 2019). It has also been found

that people tend to overestimate how much their peers actually drink, which can lead to unrealistic views on what is 'normal' (Cox et al., 2019). In our study, most of the tweets listed out specific names of people, which are most likely to be people close to them. While peers usually influence someone to drink more, families may also play a role in the amount of alcohol someone chooses to consume. In previous studies, it has been found that the amount of alcohol that the parents consume has an influence on how early the children will start to use alcohol (Hung et al., 2009). Early alcohol use can lead to a higher risk of alcoholism and other negative effects later on in life (Hung et al., 2009). Studies have also found that parents are the most likely source of alcohol for their children, meaning that they may be encouraging them to drink (King et al., 2016). A few tweets in our study mentioned drinking with family members, showing that this is something to pay attention to in terms of high-intensity drinking.

Certain locations can also play a role in how much someone may drink. This can depend on many different factors such as ease of getting the alcohol, cost of alcohol, social setting, and age. Underage drinking is likely to occur at someone else's home (King et al. 2016). This could be due to the fact that underage people would be unable to get into a bar or club, limiting their options for locations to drink. However, our study showed that many people were drinking outside of a private residence, which may show that a majority of our tweets were sent by people that were at least 21 years old.

**Conclusions**

This study sought to understand the factors that influence adolescents and young adults to engage in high-intensity, or blackout, drinking. The content analysis of Twitter messages determined that the most important factors that influence blackout drinking are the type of alcohol consumed due to alcohol marketing, the event happening when alcohol is present, the

people that they are with, and the location that the drinking is occurring in. It will be important to study these factors further to determine how to prevent high-intensity drinking and its associated consequences among adolescents and young adults.

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