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“Can’t wait to blackout tonight”: An analysis of the motives to drink to blackout expressed on Twitter.

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Abstract

Background: Alcohol-related blackouts are associated with a range of negative consequences and are common among social drinkers. Discussing alcohol use on social networking platforms (e.g., Twitter) is common and related to higher alcohol consumption levels. Due to the wide spread nature of alcohol-related social networking posts and alcohol-related blackouts, we examined the content of alcohol-related blackout posts/“Tweets” on Twitter, with a focus on intentions to blackout and specific motivations for blacking out.

Method: A set of Tweets containing “black out,” “blackout,” “blacking out,” “blacked out,” or “blacks out” were collected from April 26th 2018 and April 29th 2018. Using NVivo software, we coded all pre-blackout Tweets (i.e., before the blackout experience) for intentions and motives to blackout.

Results: Most Tweets that we collected expressed an intention to blackout and these intentions ranged in strength (i.e., will blackout vs. might blackout). With respect to specific motives for blacking out, celebration motives were identified. For example, Tweets addressed blacking out to celebrate one’s birthday, someone else’s birthday, a school or work accomplishment, a sports win, during a vacation, or a holiday. Another endorsed motive for blacking out was loss or coping motives. For example, the Tweets commented on blacking out to deal with stress or a bad day.

Conclusion: Our findings suggest that Twitter users express intentions to blackout due to celebration or coping reasons. Given the consequences associated with blackout drinking, future research should consider the link between blackout intentions, blackout motives, and alcohol-related harm.

Keywords

Blackout; Twitter; social networking; social media; alcohol; problem drinking

Introduction

Alcohol consumption continues to be a public health concern and is one of the leading risk factors for injury or death and disability worldwide (Griswold et al., 2018). As well as severe long-term negative consequences (i.e., cancer; Connor, 2017), alcohol use is also associated with a range of short-term negative consequences including alcohol-induced memory loss (Hingson et al., 2016; Valenstein-Mah et al., 2015). Social networking websites have become increasingly popular and are a common outlet for individuals to discuss alcohol and substance use (Alhabash et al., 2018; Boyle et al., 2016). But to date, no studies have examined the discussion of alcohol-related memory loss (i.e., blackouts) on Twitter, despite the value such exploration may have for our understanding of blackout-related attitudes and behaviors.

Alcohol-related Blackouts

Alcohol-induced memory loss (i.e., blackout) is a period of time where an individual has an absence of memory for at least some part of the drinking session (Wetherill & Fromme, 2016; White, 2003). Typically referred to as either an en bloc blackout (complete loss of memory with a distinct onset) or fragmentary blackout (partial loss of memory that may be recalled later), blackouts occur because of the swift or heavy consumption of alcohol in a single session (Hartzler & Fromme, 2003). Despite the fact that blackouts occur at relatively high Blood Alcohol Concentrations (BAC; most at around .20 g/dl; Ryback, 1970; Wetherill & Fromme, 2016), blackouts are a frequently reported alcohol-related consequence, especially among young adults (Barnett et al., 2014; Chartier, Hesselbrock, & Hesselbrock, 2011; Hallett et al., 2013; Jennison & Johnson, 1994). Unfortunately, because the drinker is responsive and conscious during a blackout, blackouts are often associated with an increase in other negative alcohol-related consequences (e.g., injury, Emergency Department admissions, sexual victimization; Mundt & Zakletskaia, 2012; Mundt et al., 2011; Valenstein-Mah et al., 2015).

Theories such as the Theory of Reasoned Action and Theory of Planned Behavior (Ajzen, 1985; Fishbein & Ajzen, 1975) suggest that behavioral *intentions* are important drivers of actual behavior. Indeed, in the context of alcohol use, Cooke, Dahdah, Norman, and French (2016) meta-analyzed 40 studies and found a strong association between intention and drinking behavior. Although there is some preliminary evidence to suggest that college students intend to experience blackouts or drink until they blackout (Miller et al., 2018), the extent to which intentions to blackout are endorsed and expressed on a social networking platform among the general population has not been examined.

Additionally, when intentions to experience a blackout are present, little is known about the specific motivations one may have for blacking out. In motivational models of drinking, drinking to regulate affect is highlighted as a pathway to high levels of alcohol consumption (Cooper, 1994; Cooper et al., 1992; Cox & Klinger, 1988; Grant et al., 2007). Two drinking motive types are consistently related to greater levels of alcohol use or alcohol-related consequences – enhancement motives (i.e., drinking to enhance positive mood states) and coping motives (i.e., drinking to alleviate negative mood states). Specifically, in both cross-sectional (Merrill & Read, 2010) and longitudinal (Merrill, Wardell, & Read, 2014) studies,

enhancement motives for drinking were positively related to several consequences (including blackouts). Furthermore, enhancement motives were positively related to increased blackouts during the first two years of university (Merrill et al., 2016). Similarly, coping motives have also been linked to a range of alcohol-related consequences above and beyond level of drinking (Merrill & Read, 2010; Merrill, Wardell, & Read, 2014). In sum whereas there is some evidence for a link between particular drinking motives and blackouts, none of these studies measured motives for blacking out in particular.

Twitter

Social networking websites have become increasingly popular in the past decade (Pew Research Center, 2018a). One of the most popular social networking websites is Twitter, a free platform where users can post public micro-blogs (i.e., Tweets) for other users to interact with by “liking,” replying, or re-tweeting, thereby sharing content with followers (i.e., people on Twitter who want access to the micro-blog information in their personal timeline). Although Twitter is popular across all age groups, it is particularly popular among young adults, who also report the highest levels of substance use and hazardous drinking (Griswold et al., 2018). Indeed, a recent estimate suggests that 40% of 18–29 year olds report using Twitter (Pew Research Center, 2018b). Given that there is a significant amount of public content generated in the form of Tweets (estimated 500 million daily), researchers are beginning to collect and analyze Tweets to answer research questions.

Twitter and Substance Use

Despite the public nature of social networking websites, they are a common outlet for individuals to discuss substance use (Boyle et al., 2016; Egan & Moreno, 2011; Griffiths & Casswell, 2010; Moreno, Arseniev-Koehler, Litt, & Christakis, 2016). For example, a study of 11,236 university students found that 97% used social networking websites and that 71% of these students reported posting alcohol-related content (Erevik et al., 2017). On Twitter specifically, Alhabash et al. (2018) found that 2% of the nearly 50 million Tweets published in the United States in March 2015 included alcohol-related content (Alhabash et al., 2018). Exposure to and engagement with alcohol-related social networking content may be linked to alcohol use. Indeed, research suggested that there is a relationship between engaging in alcohol-related social networking content and alcohol use (Boyle et al., 2016; Moreno et al., 2016; Steers, Moreno, & Neighbors, 2016) and a recent meta-analysis suggested that the relationship is moderately strong (Curtis et al., 2018).

Although drinking-related posting is common on Twitter (Alhabash et al., 2018), there is a relative paucity of literature examining the content of Tweets. To date, Twitter content research has often either focused on temporal variations in Tweets (i.e., differences in the number of Tweets during certain time periods) or the sentiment of the Tweets (i.e., positive or negative content). In the first study of its kind, West et al. (2012) collected Tweets to look at the temporal trends in alcohol-related Twitter chat (e.g., Tweets with terms like drunk, wasted, tipsy; West et al., 2012). From the nearly six-million Tweets collected, they found that alcohol-related Tweets mirrored typical alcohol-use patterns. In a similar study, Cavazos-Rehg et al. (2015) scraped (i.e., web harvesting) Tweets containing alcohol-related content. In this study, the Tweets tended to be more positive and pro-alcohol (79%) than

negative and anti-alcohol (only 7%; Cavazos-Rehg et al., 2015). Other researchers have used Twitter in a similar manner to highlight that: (a) Tweets that reference co-use (both alcohol- and marijuana-use) tend to be positive (Krauss et al., 2017), (b) alcohol marketing can reach underage children and adolescents (Winpenny, Marteau, & Nolte, 2013), (c) alcohol brands market products differently in different countries (Gupta et al., 2018), and (d) the content of Tweets can be used to predict the alcohol consumption of US counties (Curtis et al., 2018).

The Present Study

The goal of the present study was to assess the ways in which individuals discuss blackouts/blackout drinking on a social networking platform, in advance of a drinking event, with a particular focus on expressed intentions to blackout. We also sought to identify specific motives for blacking out and/or blackout drinking expressed via Twitter. Rather than testing *a priori* hypotheses or seeking confirmation of specific theoretical frameworks related to intentions and motives for drinking broadly, due to a specific focus on blackouts, our goal was *generate* hypotheses that could be more rigorously tested in future studies with superior sampling strategies and statistical tests. Twitter is an ideal platform to collect these preliminary data, as an estimated 2% of Tweets contain alcohol-related content (Alhabash et al., 2018), Twitter posts are common among the highest risk age group (young adults), and the Tweets are written unprompted by researchers. Furthermore, researchers have noted the limitations of retrospective assessments of motives for drinking behavior (Gmel, Labhart, Fallu, & Kuntsche, 2012) and using Twitter data allows for an ecologically valid examination of motivations for a behavior prior to the actual occurrence of that behavior. A better understanding of whether and why individuals seek to experience alcohol-induced memory loss may aid in the development of assessment tools and interventions targeting this high-risk outcome.

Materials and Method

The Twitter data used in the current study are publicly available Tweets. To capture blackout-related tweets, we used NVivo's NCapture plugin (QSR International Pty Ltd, 2019). NCapture is a browser-plugin that uses Twitter's Application Program Interface (API) to capture tweets to import a subset of Tweets into NVivo for coding. Using NCapture, we collected global English language Tweets available between Thursday April 26th 2018 and Sunday April 29th 2018 that contained one of the following terms: "black out," "blackout," "blacking out," "blacked out," or "blacks out." It is important to note that NCapture does not collect all Tweets. The random subset of Tweets available is defined by Twitter's API and is based on the number of Tweets and the Twitter traffic at the time of collection. Furthermore at the time of data collection, Twitter's API limited the number of Tweets that could be collected at one time (max = 18,000 every 15 minutes) and limited the timeframe in which Tweets could be collected (only Tweets from the past 7 days). Thus, we allowed for fifteen minutes between each NCapture search, and we captured the term "black out" multiple times over the weekend period and combined the Tweets into a single file.

Following the initial collection, we removed non-English language Tweets¹, all re-Tweets (i.e., a Tweet that was reposted verbatim), and all of the Tweets that were deemed to be

unrelated to alcohol (e.g., Tweets referencing: power outages, blackout curtains, the color black, social media blackouts). To remove non-alcohol-related Tweets, a group of undergraduate volunteers independently coded whether a tweet was 'definitely not alcohol-related' or 'potentially alcohol-related.' Two undergraduate volunteers read through and coded each Tweet and Tweets where both volunteers marked the tweet as 'definitely not alcohol-related' were removed (Cohen's kappa ranged from .785 [asymptotic SE = .022] to .898 [asymptotic SE = .017]). Following this process, we were left with 4,736 original tweets (see Figure 1 for complete flow of Tweets lost at each step) in our dataset for analysis.

Analysis

Each Tweet in our final dataset (including any images or url links) was coded by at least two of the three of the authors (all alcohol researchers) using NVivo11 software. Coding occurred in two stages. The first stage of coding focused broadly on categorizing the timing of the Tweet (pre- versus post-blackout). Specifically, each Tweet was categorized to indicate whether it was posted in anticipation of a future blackout/blackout drinking occasion vs. in reflection upon a prior blackout/blackout drinking occasion. In order to ensure that coding at this stage was similar, the research team categorized a subset of Tweets independently before comparing categories and discussing discrepancies. Following this, the researchers independently categorized the Tweets as either pre- or post-blackout. Across keyword files, average agreement rates were 96.2% for pre-blackout and the average kappa was .87.

Next, we developed a coding scheme for sub-coding the pre-blackout Tweets with respect to our primary interests in this study: intentions to black out and specific motivations for blacking out. Rather than relying on a priori codes driven by a particular theory (e.g., four factor motivational models) and similar to other substance use Twitter researchers (e.g., Cavazos-Rehg et al. 2015), the development of the coding scheme was done inductively (Neuendorf, 2002). That is, the three researchers overviewed an initial subset of the pre-blackout Tweets and independently identified repetitions in the data before discussing and compiling a final list of codes to be applied to all Tweets in this second stage of coding. This code development process resulted in a codebook with four codes (and code definitions) that included: (1) intention (comments clearly suggesting that the person plans to blackout or get blackout drunk), (2) celebratory drinking motives (comments indicating a desire to blackout due to a special occasion or event), (3) loss/coping motives (comments indicating a desire to blackout in order to cope with negative emotions, loss, or other events), and (4) other motives (comments indicating a clear reason/rationale for the desire to blackout that does not fit within celebratory or coping). Again, in order to ensure that coding was similar, the research team first coded a subset of 200 Tweets independently, following the codebook, and discussed and resolved coding discrepancies (i.e., came to an agreement on final code) before independently coding all remaining pre-blackout Tweets. Coding decision details and summaries of these discussions of coding were logged in a real time audit trail. All Tweets were coded by at least two of the researchers and across major codes the kappas were .82

¹Although we specified that only English language Tweets should be collected, 2,032 non-English Tweets were identified and removed.

(intention), .89 (celebratory), .89 (coping/loss) and .79 (other). Average agreement rates between coders were above 95%, and therefore well above 80% which is considered a requirement for good coding agreement (Guest et al., 2012).

Once all tweets were coded, summaries of concepts and themes were generated from reviews of coded data. Of note, the process of applying “codes” to the data, and the process of identifying themes from the coded data were highly intertwined. That is, part of the theme was already emerging at the time of developing the codebook (e.g., individuals express intentions to blackout). In some cases, however, more detailed thematic conclusions were reached (e.g., specific types of events for which individuals may desire to black out). In the results section, we present each of the four codes along with themes generated from those codes and representative Tweets (Table 1).

Results

As seen in Table 1, 1,163 (22%) of the Tweets were coded as pre-blackout. Although collecting Tweets makes it difficult to collect demographic information, we can collect some information about the author’s Twitter use. On average, the authors of the pre-blackout Tweets had written 23,149 Tweets ($SD = 35,733$; Median = 11,397) and had 1,041 followers ($SD = 2,757$; Median = 477).

Intentions to blackout

One theme that was apparent in our review of the coded Tweets was that some people do intend to blackout and/or engage in blackout drinking and express this on a social networking platform. Of the 1,163 Tweets coded as pre-blackout, over half ($n = 603$; 52%) included expression of intention to blackout or engage in blackout drinking. Examples of phrases that indicated intention to blackout included: *trying to blackout, so pumped to blackout, time to get blackout drunk, I wanna blackout/drink until I blackout, the plan for tonight is to blackout, I need to blackout, I’m gonna blackout, can’t wait to blackout, join me as I blackout, I’m ready to blackout, and the goal for today is to blackout*. The Tweets coded for “intention” also demonstrated that there was variation in the strength of intentions to blackout. That is, some authors had weaker intentions to experience a blackout (“might try to blackout”) compared to stronger intentions (“definitely going to blackout”). Though difficult to discern with confidence, there is also likely variation in the timing for which a blackout was intended. Some tweets described more immediate intentions (e.g., tonight, today) while others were vague in when the blackout drinking was anticipated to occur.

Motives/Motivational Contexts for Blacking Out

Of the 1,163 Tweets coded as pre-blackout, nearly a third ($n = 334$; 29%) included specific motives to blackout. We describe themes derived from data coded on each of the three motive codes (celebratory, loss/coping, other) below and provide examples in Table 1.

Celebratory motivation.—One blackout motive identified from the Tweets was celebratory motives. Review of these data resulted in a theme suggesting that individuals are motivated to black out as a way of celebrating an occasion or accomplishment, or during

some special event. Several subcategories within this theme are shown in Table 1. One of the most commonly referenced occasions was one's own birthday. However, participants also described intent to blackout during a celebration of someone else's birthday. Intent to blackout was also expressed with regard to school-related accomplishments, including celebrating the end of a semester/school year, end of finals, graduation, completion of an assignment, or a good grade. Work accomplishments, such as making a sale or interviewing for jobs, also were described as motivational contexts for blackouts. A number of Tweets discussed plans to blackout during upcoming vacations, as well as holidays (e.g., St. Patrick's Day, Cinco de Mayo). Additionally, intentions to blackout in the context of upcoming special events (e.g., senior bar crawl, prom, formal season, bachelor party, wedding, graduation party) were also expressed. A specific type of celebratory motive involved that related to sports; either a win during one's own sporting event, or that of a professional team of which an individual was a fan. Generally, these tweets described anticipated events that would be social in nature.

Loss/coping motivation.—Another identified motivational theme for blacking out was to cope with negative emotions and/or losses. Tweets referenced general stress as well as having a bad day. Depression and anger were two specific moods that were noted. Additionally, individuals pointed to blacking out as a way to cope with stress or negative emotions specific to school (i.e., finals week) or romantic troubles. Some Tweets specifically noted a desire to forget something, such as another person, “who I am” “how shitty this world is” or “everything.” Individuals also cited sporting event losses/mistakes as reasons to blackout. For example, there were several Tweets indicating desire to black out due to disappointment with National Football League (NFL) draft picks. In contrast to the celebratory motive tweets, it was less evident whether planned drinking events would be social in nature when these coping/loss motivations were expressed.

Other motivations.—Several other reasons to black out were described that did not fit well into the above thematic categories. For example, blackout intentions were mentioned several times in the context of specific weather conditions. Typically, warm and/or sunny weather were cited as a reason to blackout. Additional examples are shown in Table 1.

Discussion

In the present study, we aimed to assess how individuals discuss blackouts/blackout drinking on Twitter before a drinking event, with a specific focus on intentions to blackout and motives for blacking out. Given that the majority of motives research focuses on retrospective assessments of motives for drinking behavior (Gmel et al., 2012), analyzing Tweets allowed us to study motives for blacking out prior to the drinking session, which has potential to inform future scale development.

Specifically, we found that a number of blackout-related Tweets we collected were written before a drinking event and most of these Tweets involved explicit expression of intentions to blackout. Further, we identified that there were specific motives for blacking out and the two main themes developed from the Tweets were celebratory motivations for drinking (e.g., for a birthday) or coping/loss motives.

Intentions to blackout

Some preliminary evidence has found that college students may intend to blackout or engage in a style of drinking that is likely to result in alcohol-induced memory loss (Miller et al., 2018). The current study corroborates these findings by showing not only an intention to black out, but also a willingness to express such intentions publicly (i.e., on Twitter). Although we do not know whether these individuals went on to experience a blackout after writing their Tweet, both theory and past research suggests that there is a strong association between intention and behavior (Ajzen, 1985; Collins & Carey, 2007; Fishbein & Ajzen, 1975). At the very least, by intending to drink enough alcohol to experience a blackout (an estimated BAC of 0.20g/dl; Ryback, 1970; Wetherill & Fromme, 2016), the Tweets' authors are intending to drink in a style that makes them vulnerable to a range of other severe consequences (e.g., alcohol-related injuries, hospitalization, and sexual victimization). A closer examination of blackout intentions is an important avenue for future research and should assess the association between blackout intentions and alcohol use and negative consequences. This may be particularly important as the strength of intention varied in the Tweets, with some authors "trying to blackout" vs. "definitely going to blackout." To further explore intentions to blackout, future research might examine if other constructs from the TRA/TPB (e.g., perceived behavioral control, attitudes, subjective norms), which directly predict intentions (Ajzen, 1985) are also present in the Tweets.

Motives to blackout

Although motives for alcohol use in general have been extensively researched, specific motivations to blackout have not. The two main motives for blacking out that were recognized in the present study (celebratory and coping/loss) may provide important avenues for future research and intervention. In general, previous literature has found that both celebratory drinking and drinking to cope motives are associated with both alcohol use and harm. In the context of celebratory drinking, events like 21st birthdays, Christmas, end of high school events, and New Year's Eve are associated with significantly higher levels of alcohol use and harm when compared to a "typical" period of time (Neighbors et al. 2007; Riordan et al. 2016). Given that a number of intervention and prevention strategies used by schools, universities, and community groups to address celebratory drinking (Neighbors et al. 2007; Quek et al. 2012; Riordan et al. 2016), future interventions could incorporate a focus on blackouts and blackout motives. This may be particularly important for underage drinking events, like senior Prom or Formal Season (which were mentioned in the Tweets). Whereas alcohol education likely already occurs around prom season, a specific focus on blackout education and prevention during this time might be warranted.

In the context of coping/loss reasons for blacking out, there were a number of references to "forgetting this world," "depression," or "anger." Given that these intentions were written in the form of publicly available Tweets, it is likely that these were a "cry for help." This finding may highlight Twitter as a forum to deliver intervention materials. Intervention material can focus on teaching active rather than avoidance-related coping skills as forgetting negative experiences or emotions during a blackout is temporary and does not really solve a problem, and may in fact cause additional problems interventions.

In the current study, we approached the data without a pre-specified conceptual framework (i.e., the motivational drinking model), in order to draw truly inductive conclusions about motives for blacking out that were based in the data themselves. However, our findings did partially fit with motivational models designed to understand alcohol use more generally (Cooper, 1994; Cooper et al., 1992; Cox & Klinger, 1988). Two motive types have been consistently related to experiencing negative consequences – coping and enhancement motives (e.g., Kenney, Lac, LaBrie, Hummer, & Pham, 2013; Merrill, Wardell, & Read, 2014). In the present study, a theme emerged consistent with coping motives, a type of motive previously shown to be related to experiencing negative consequences (including but not limited to blackouts, Merrill et al., 2014). Additionally, the celebratory motives for blacking out observed here may reflect a combination of enhancement (to enhance positive mood) and social (to gain social rewards) motives. While we did not observe evidence of conformity motives, it is possible that blacking out to conform does indeed occur in some heavy drinking social groups, but is less likely to be publicly expressed. The extent to which this is true could be examined in future studies. Still, taken together, our findings have potential implications for the initial development of a measure of blackout motivations.

Twitter and normalizing blackouts

In the present study, we used Twitter to help us answer an important research question. Although a research study could have been designed where we directly asked people about their intentions and motives, Twitter provided a more naturalistic forum across a broad segment of the population. Analyzing Tweets also allowed us insight into how blacking out is expressed publicly and to analyze motives and intentions of individuals unprompted. Given the public nature of these Tweets, it is important to note that they may serve to normalize blacking out as a consequence of drinking (or as the aim of a drinking). There is a substantial body of literature highlighting that individuals (particularly young adults) drink according to their perception of others' drinking (Borsari & Carey, 2001) and a number of studies have highlighted that exposure to or engagement with alcohol-related content on social networking sites may influence behavior (Boyle et al., 2016; Curtis et al., 2018; Moreno et al., 2016; Steers, Moreno, & Neighbors, 2016). Thus, exposure to pre-blackout drinking Tweets may affect an individual's perception of blacking out as a normal consequence of drinking. This assertion is particularly concerning because Tweets can reach a wide audience as in the current study the authors of Tweets had a median of 477 followers.

Future research

In the present study we analyzed Twitter to inform measure development and generate hypotheses. Regarding measure development, this study lays the groundwork for developing both an "intention to blackout" scale and specific motives to blackout scale. We believe that future research is now necessary to establish whether these motives to blackout occur outside of Twitter, and how they relate to actual blackout drinking behavior. In terms of hypothesis generation, future research should aim to determine whether intention to blackout or specific blackout motives are associated with an actual blackout and other alcohol-related consequences.

Limitations

There were several limitations of the present study. First, the frequency with which some tweets arose may have been biased by the time frame over which we collected the tweets. For example, we only collected Tweets over one weekend and observed Tweets related to the end of the school year and those referencing specific holidays that fell in the collection time frame. It is very difficult to collect data during a period devoid of alcohol-related events, but future research could correct this limitation by collecting Tweets over a longer period of time and randomly selecting a sample (c.f. Krauss et al., 2017). Second, we did not collect data on participant characteristics. This prevents us from describing our sample and/or linking individual differences such as gender and age to the coded tweets and/or themes. Of note, the content of many of the tweets suggests that they are written by individuals in high school and/or college, which is a known high-risk time for blackouts. Third, it is difficult to determine whether the authors who reported intentions to blackout *actually* intended to blackout or whether they meant “drink heavily.” For example, Miller et al. (2018) found that focus group participants used the term “blackout” to mean get very drunk and lose control. Although this distinction is important, the use of the term “blackout” on Twitter still normalizes blackouts as a drinking outcome. To correct these limitations, future research could recruit and track participants’ over time and use ongoing surveys and monitor participants’ Twitter handles. Finally, because we were limited by Twitter’s API, we did not collect *all* blackout-related Tweets during the study period, but a sampling of Tweets made available by Twitter. This limits our ability to generalize our findings because we are unable to calculate a sampling error term; however, our aim was not to estimate the proportion of all Tweets that included alcohol-related blackouts, but to understand the manner in which individuals discussed blackouts before a drinking session on Twitter.

Conclusion

Using Twitter, we were able to naturalistically gather information about intentions to drink to blackout as well as motives or reason for blacking out. This information prior to the drinking event provides crucial insight for future intervention design, which has traditionally relied on participants’ reflections on the experience with potentially fragmented or limited memories of the event. Our findings suggest that individuals express explicit intentions and motives to experience a blackout in Tweets. Of particular concern is that Twitter use is widespread and these Tweets are publicly available. Therefore, expressions of blackout-intention may normalize heavy alcohol use that ends in a blackout or normalize a blackout as the goal for a drinking session. Thus, there is a clear aim for future research and interventions to consider blackout intentions, especially since alcohol-related blackouts are associated with more severe alcohol-related consequences (e.g., injury, assault).

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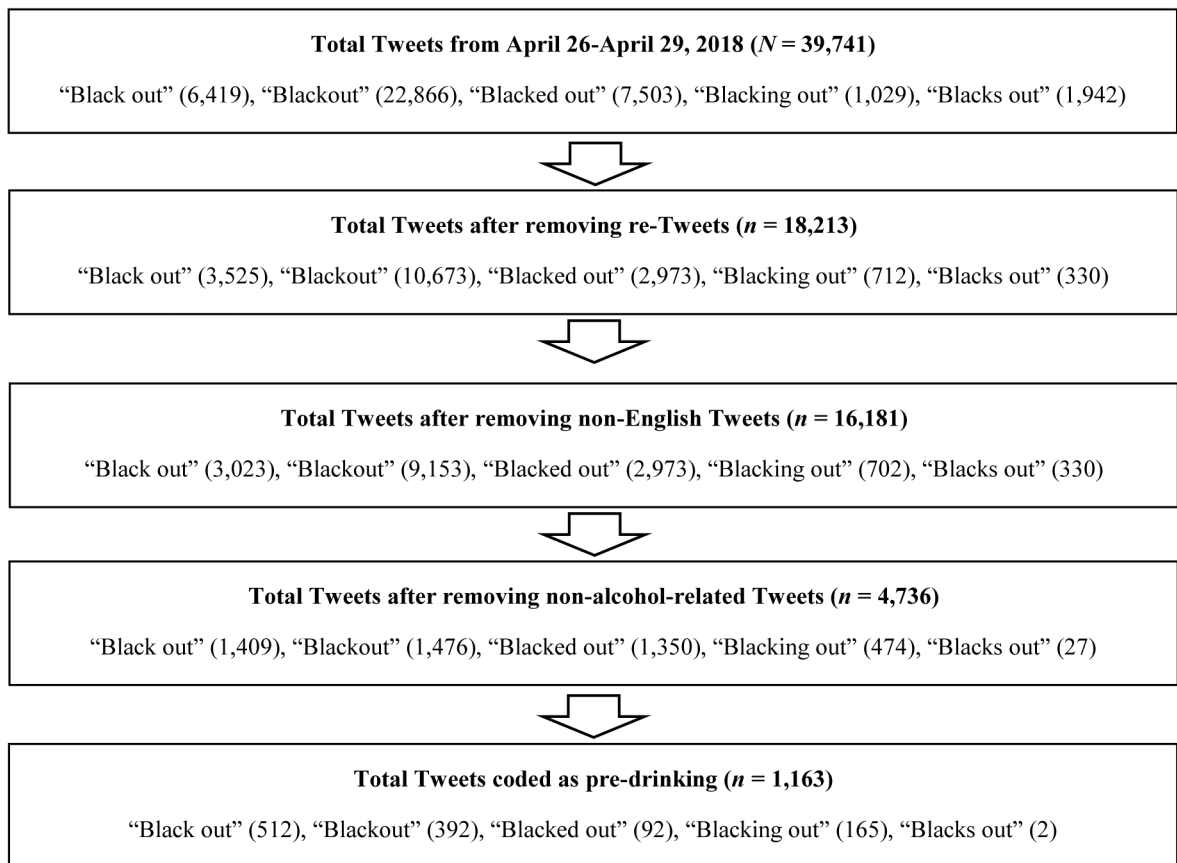


Figure 1.
 Flow of Tweets removed at each stage of data cleaning.

Nvivo codes for tweet categorization, themes derived from review of coded data, and representative tweets within themes.

Table 1.

Code (number of tweets)	Themes	Example tweets	
Intention (n=603)	Individuals express intention to black out or engage in black out drinking.	<ul style="list-style-type: none"> Trying to black out tonight Join me as I black out tonight. Cheers. Can't wait to black out tonight 	
	Celebratory motives (n=225)	Individuals are motivated to black out to celebrate....	<ul style="list-style-type: none"> Let's black out on my birthday :)
		Their own birthday	<ul style="list-style-type: none"> happpppyy birthday bubba!! can't wait to black out tonight
		Someone else's birthday	<ul style="list-style-type: none"> I can't wait to black out after my last final If I sell this jeep right now, who's down to black out with me tonight?
	Sports wins	<ul style="list-style-type: none"> Won our first game by forfeit and I'm gonna black out 	
	Vacations	<ul style="list-style-type: none"> Four days until I'm blacked out in Cancun 	
	Holidays	<ul style="list-style-type: none"> Thought about taking a break from drinking next weekend but I looked and it's Cinco de Mayo so looks like I'm gonna have to blackout again 	
	Other events		<ul style="list-style-type: none"> ok so I really plan to black out on prom tryna blackout @ this weddin Trying to get blacked out at this beer festival tomorrow. Idc if they serve tiny little drinks, I'll hit up every single tent
		Individuals are motivated to black out to cope with negative emotional states or events.	<ul style="list-style-type: none"> m so stressed that I need to get black out drunk tonight
			<ul style="list-style-type: none"> I high key wanna get black out drunk and choke on my on vomit., anyone else with very little will to live want to join me?
<ul style="list-style-type: none"> Whatever I just want it to be the weekend already so I can black out & just forget everything for a while 			
<ul style="list-style-type: none"> i want to get blackout drunk to forget all about this horrible, horrible year 			
Loss/copeing motives (n=71)	Individuals cite sports losses as motivations to black out.	<ul style="list-style-type: none"> If LeBron loses tonight, I'm getting blackout drunk and crying myself to sleep 	

Code (number of tweets)	Themes	Example tweets
Other motives (<i>n</i> =55)	Individuals cite other (non-celebratory, non-coping) motives to black out.	<ul style="list-style-type: none"> • i haven't drank in 21 days & gonna treat myself to a blackout tonight • Do you remember when you joined Twitter? I do! #MyTwitterAnniversary 8 years? JFC. Time to get a drink and black out • Pretty day to blackout by the pool • The sun make me wanna black out idk • Tonight's forecast: rainy with a 100% chance of blacking out