

Identity, influence, and intervention: The roles of social media in alcohol use

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Alcohol-related content is common on social media and may both reflect and influence offline drinking behavior. Posting alcohol-related content has been linked to alcohol outcomes, including higher rates of alcohol consumption, cravings, alcohol-related problems, and clinical alcohol use disorders. Exposure to alcohol-related content on social media has likewise been associated with adverse alcohol outcomes. In this paper, we review research on the relationship between social media and alcohol use, and explore the ways that online identity and social influence can account for this relationship. Finally, we call for further research on the use of social media as a platform for prevention and intervention efforts.

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Picture this: you're browsing through your Facebook feed one morning when you notice a friend's status update about their wild Friday night. It's the latest in a long line of posts they've been sharing recently about their drinking and partying. You feel a twinge of uneasiness — should you feel concerned about your friend? But, it's only Facebook, right?

Such alcohol-related content appears surprisingly frequently in social media [1,2]. Given the seriousness of problematic alcohol use as a public health concern [3], should such content be taken seriously as an indicator or influence on actual health behaviors? In this paper, we review recent work on social media and alcohol use with an emphasis on determining how and why the two are related.

What is social media and how does it relate to alcohol?

Social media loosely includes online and mobile platforms where people voluntarily come together to generate, share, and consume content, including text, pictures, and video. Popular social media platforms include Facebook, Twitter, YouTube, Tumblr, Vine, Instagram, and Snapchat, among others. Historically, such platforms also included mySpace, AOL Instant Messenger (AIM), and Bebo. Social media use is pervasive. According to the Pew Research Center, 71% of the US population reports active use of a Facebook account, and although use is more prevalent among teenagers, a majority of older adults also use it. Twitter use is slightly less common, with only 23% of online adults reporting active use.

Surprisingly, alcohol-related content is quite common on social media, including Facebook [1,2] and MySpace [4–6]. Content analysis of Facebook pictures and messages suggests that alcohol-related content on social media typically conveys positive attitudes toward alcohol [7]. Such content may even become more prevalent during college: in one study of freshmen, the percentage of students posting alcohol-related content on Facebook increased from an initial 20% to 39.9% of participants by the end of their first year [8]. Male college undergraduates were particularly likely to post alcohol-related content, with 85.3% of college men displaying alcohol in their profiles [9].

Social media and alcohol outcomes

Whether social media is related to alcohol outcomes involves at least two separate questions: first, Does social media use *in general* indicate higher risk of adverse alcohol outcomes? and second, Does *alcohol-related content* on social media reflect off-line behavior or influence alcohol outcomes off-line? In answering these questions, it's important to address causal direction (e.g., does off-line behavior drive social media use, or does social media use drive behavior?), as well as the role of potential third-party variables, such as personality or drinking motives.

There is mixed evidence on whether social media use on its own is associated with drinking. In one survey, general social media use was *not* related to differences in alcohol consumption, but social media use specifically related to alcohol marketing *was* linked to increased alcohol consumption and problem drinking [10]. A longitudinal study of adolescents likewise found no association between general social network use and drinking [11•]. By

contrast, other studies have found links between general social media and alcohol use. Among teenage adolescents, drinking has sometimes been associated with increased computer use and social media use [12]. In a slightly older population, college undergraduates who have more Facebook friends [13*,14] also report more hazardous drinking, as do young adults who have more online peer ties and denser social media networks [15]. This is particularly true for men, which may reflect their greater tendency to use alcohol as a form of social bonding and develop networks of friends who drink [15]. How social media is used and who uses it may matter in determining whether increased use is associated with adverse alcohol outcomes.

Explicit alcohol-related content on social media, on the other hand, may be more problematic. People who post more alcohol-related content on Facebook also consume more alcohol [13*,14,16,17]. Female university students who post alcohol-related photos of themselves on Facebook report higher rates of alcohol consumption [18], and an analysis of Twitter posts in the United Kingdom found that alcohol-related posts mirrored real-time local and national patterns of alcohol consumption.

In addition to consumption, college undergraduates who report frequently posting about alcohol on Facebook also experience more alcohol-related problems, such as missing work, not being able to study, or getting into fights [13*,14]. Frequent or widespread alcohol-related content on Facebook also predicts risk of meeting clinical criteria for alcohol use disorders and alcoholism in correlational studies [13*,14,19], as well as cravings for alcohol [13*]. Underlying alcohol use disorders may even drive increased sharing of alcohol-related content on social media. In a single longitudinal study, college freshmen who met criteria for dependent alcohol use prior to starting college subsequently posted more content explicitly featuring intoxication and problematic alcohol use during their freshman year [20]. In summary, alcohol-related content on social media has been linked to a number of outcomes, including alcohol consumption, alcohol-related problems, cravings, and clinical measures of risk for alcoholism.

Why is social media use linked to alcohol outcomes?

Both social media use in general and alcohol-related content in particular may be associated with adverse alcohol outcomes for the same underlying reasons: first, people's self-representations on social media accurately reflect off-line behaviors, and second, people's behavior is influenced by the content that they view online, especially if it comes from trusted sources [21].

Identity

Drinking identity is an important predictor of alcohol use, particularly for college students [22], and may include the online construction of both individual and group

identities. Social media profiles reflect online identities that are largely accurate and reflective of actual personality and behavioral traits [23]. When neutral coders observed online Facebook profiles, their perceptions of the profile owner's personality were highly correlated with actual personality traits, as rated by the profile owners and their friends in real life [23]. As reviewed above, alcohol-related content on social media profiles is directly correlated with actual alcohol behaviors, including consumption, alcohol-related problems, and criteria for clinical alcohol use disorder [13*,14,17]. This is due in part to people's efforts to actively construct online identities on social media [24] which may accurately mirror their off-line identities [23]. Such identities may even provide a historical track record of actual behavior [25]. By contrast, impression management, or trying to 'appear cool' by posting alcohol-related content that does not reflect one's actual behavior, appears to play a relatively minor role in social media. Indeed, in focus groups, adolescents reported that they typically interpreted alcohol-related content displays as reflecting actual use rather than mere posturing [26].

In addition to self-presentation, individual and group identity may also play a role in determining who to include in one's social media networks and how the members of those networks interact. In a longitudinal study of adolescents, Huang *et al.* [27**] found that over time heavy drinkers sought out friends on Facebook who also used alcohol. Such selection effects, in which a person who uses alcohol seeks out like-minded individuals, may partially account for the consistent finding that larger and denser social media networks are linked to heavier alcohol use [2,13*,14,15].

Online networks of like-minded individuals may even develop cultures that foster online portrayal of actual alcohol use. A study of Australian and New Zealand adolescents in a heavy youth drinking culture found that Facebook use was very prevalent before, during, and after using alcohol. Sharing positive upbeat photos of socializing and drinking while avoiding photos that depicted negative events or over-intoxication was an important element of managing their online identity and relationships [28]. Such communal sharing of drinking stories and positive photographic portrayals of drinking may contribute to pro-alcohol group cultures that not only reflect their members' activities, but actively encourage drinking [29*].

Influence

In addition to actively contributing content to their social networks, people on social media spend considerable time viewing the content generated by others. As such, people's attitudes, beliefs, and behaviors are probably influenced by the content that they see on social media [21]. However, how and when alcohol-related content posted by others results in changes in drinking behavior is

unclear. One study in college students found robust correlations between one's own posting of alcohol-related content on social media and drinking behavior, but only weak correlations between drinking and exposure to alcohol-related content posted by others [13*].

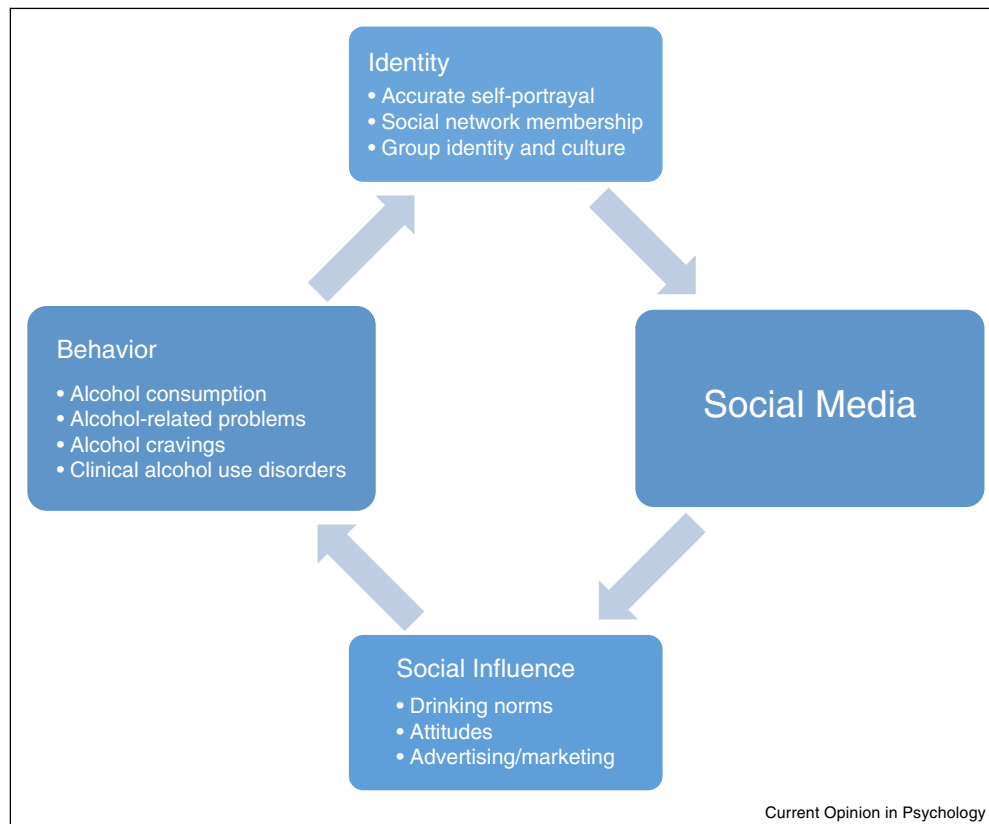
On the other hand, a longitudinal study of 1563 younger adolescents found that exposure to drinking on Facebook significantly predicted subsequent increases in drinking behavior [11**]. Likewise, in a cross-lagged correlational study, Tucker *et al.* [30*] found that middle schoolers who viewed alcohol-related content on social media were more likely to drink one year later. These findings are not confined to adolescents. Stoddard and colleagues [17] found that the use of alcohol and other drugs by one's online peers was related to increased alcohol and drug use in college students. In one study, college freshmen even used Facebook profile content as a basis for deciding whether to drink with a new friend [31].

One way that exposure to alcohol content on social media may influence drinking behavior is through the alteration of perceived social norms. Drinking norms, or how much people believe that similar others are drinking,

powerfully influence actual drinking behavior [32,33]. Perceptions of drinking norms are often inflated: people generally overestimate how much members of their group are actually drinking. Social media may contribute to this effect by making alcohol-related content particularly prominent, frequent, and personally salient. Indeed, viewing alcohol-related content on Facebook leads college students to overestimate perceived drinking norms [34] and experimentally manipulating descriptive drinking norms through the use of mock Facebook profiles increases young adolescents' willingness to drink [35*]. This relationship may run in both directions: higher perceived drinking norms may also make posting of alcohol-related content on social media appear more acceptable [17].

A second major source of social influence is direct advertising and marketing from alcohol manufacturers, which may contribute to online pro-alcohol environments [29*,36]. Alcohol brands conduct extensive marketing on social media platforms, including sites such as Facebook, Twitter, Youtube, and phone apps [37]. Users on these sites can share and 'like' content generated by alcohol manufacturers with their friends, and not all platforms include adequate mechanisms for barring underage

Figure 1



Potential roles of social media in alcohol use.

visitors [38*,39]. Given their potential reach and influence, there is little empirical work examining how alcohol advertising on social media impacts drinking behavior.

Using social media for prevention and intervention

A final pivotal, if unrealized, role of social media exists in its potential for facilitating public health and clinical prevention and intervention efforts. Social media is a powerful advertising tool capable of anonymously delivering targeted ad content based on users' profiles and posting activity. There have been numerous calls [40,41*,42,43] to harness the power of social media to efficiently and cheaply target and deliver personalized interactive interventions to many people simultaneously. College students indicate that such approaches would be welcome, especially if delivered directly by a person they know well [44]. In the single study that has actively tested social media as an intervention platform, Ridout and Campbell [45**] identified heavy drinkers and randomly assigned them to either an intervention or control condition. Students in the intervention condition received a private message on Facebook challenging their drinking behaviors and perceived drinking norms using information on actual descriptive drinking norms at their university. A second set of social norms feedback followed one month later. The brief intervention significantly reduced alcohol consumption and improved the accuracy of social norm perceptions at the one month follow-up, benefits that persisted even three months post-intervention. These results suggest that social media may be an effective, if under-utilized, platform for delivering intervention efforts, and one which deserves additional attention from researchers (see Figure 1).

Conclusions

Social media and alcohol are intertwined, and alcohol-related content on social media should be taken seriously. Posting and viewing alcohol-related content on social media is linked to real world drinking behaviors, including consumption, cravings, problems, and clinical disorders [13*]. Most empirical research has focused exclusively on Facebook and MySpace, but social media is constantly evolving. Research on newer platforms (e.g., Snapchat, Twitter) is sparse, probably due in part to inevitable time lags between technological advances and the time needed to conduct and disseminate research related to them. Furthermore, little is known about how age alters the relationship between social media use and drinking. Current research focuses on teenage adolescents, college undergraduates, and emerging adults, which are special populations that may differ considerably from older adults in both drinking behavior [46] and use of social media [47].

When it comes to alcohol, social media wears many hats. Social media accurately depicts drinking behaviors in real

life, which are reflected in people's choices in who to include in their online networks and how to portray individual and group identities. Social media itself also directly influences drinking behavior through shared content and advertising, both of which may themselves influence drinking norms. This combination of identity and influence makes social media a promising and powerful tool for designing and delivering intervention efforts, a potential that has been acknowledged but not yet fully realized [45**,48].

Conflict of interest statement

The authors wish to confirm that there are no known conflicts of interest.

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