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The Influence of Social Media on Addictive Behaviors in College Students

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Abstract

Social media has become a primary way for college students to communicate aspects of their daily lives to those within their social network. Such communications often include substance use displays (e.g., selfies of college students drinking). Furthermore, students' substance use displays have been found to robustly predict not only the posters' substance use-related outcomes (e.g., consumption, problems) but also that of their social networking peers.

Purpose of review—The current review summarizes findings of recent literature exploring the intersection between social media and substance use.

Recent findings—Specifically, we examine how and why such substance use displays might shape college students' internalized norms surrounding substance use and how it impacts their substance use-related behaviors.

Summary—Additional social media-related interventions are needed in order to target reduction of consumption among this at-risk group. We discuss the technological and methodological challenges inherent to conducting research and devising interventions in this domain.

Keywords

alcohol; marijuana; tobacco; social networking sites; university students

Introduction

Nearly 90% of young adults ranging from 18-29 years old now use social media – a substantial 78% percent increase from just a little over a decade ago [1]. Additionally, those who have attended at least some college are more likely to use social media than those less educated (e.g., high school diploma or no diploma) [1]. Posting about substance use on

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social media is common among college students [e.g., 2, 3, 4]. For example, a study found that of the 71 profiles surveyed, nearly all college students' Facebook profiles contained alcohol-related content (99%), followed by tobacco references (39%), whereas a minority of students posted about illicit substances (10%, e.g., marijuana, cocaine) [4].

In their recent examination of the confluence between social media and substance use behaviors in adolescents and more broadly, young adults (e.g., college students), Moreno and Whitehill [5] identified five major content areas which have provided fruitful arenas for investigation: 1) common procedures and ethical concerns when conducting this type of research, 2) the types of adolescents and young adults which might post such displays and when they might be more likely to post them, 3) the relationship between substance use social media displays in predicting use at the individual level, 4) how observing such substance use displays might influence viewers' consumption and problems, and 5) finally, the development of social media-related interventions aimed at reducing consumption. Much of the current research into the influence of social media on addictive behaviors among college students from recent years has focused on how social media displays of addictive behaviors (mostly of alcohol and marijuana-related content) are predictive of a poster's usage and problems [e.g., 6, 7, 8] and how viewing substance use displays might influence norms thereby increasing the viewer's consumption [e.g., 9, 3]. As such, the current review will examine how and why such substance use displays might shape college students' internalized norms, which in turn, might lead to greater consumption and substance-use related problems. In addition, we will also explore the technical and methodological challenges endemic to furthering the development of additional social media-related interventions and the advancement of research in the substance use and social media domain as a whole.

Social Media Displays in Predicting Substance Use at the Individual Level

Due to the fact that social media use is now such a pervasive and prominent force in college students' lives, interactions with others on social media may redefine students' perceptions regarding, and engagement in certain activities, including addictive behaviors. Most extant research has uncovered that students' and young adults' communications on social media about substance use are positively valenced (e.g., glamorizing or endorsing substance use) and that students generally receive positive reinforcement for posting such displays [e.g., 10, 11-13] Studies analyzing alcohol- [10], marijuana- [11, 14, 15], and tobacco-related [16] posts to Twitter have identified that an overwhelming majority of posts normalized or promoted usage of each of these respective substances. Likewise, a content analysis of drinking displays on Facebook found, in most cases, alcohol was depicted through photos, rather than text [12] and in 72% of cases, alcohol-related pictures posted were shown in a positive context (e.g., pictures of students drinking at a party). Furthermore, 87% of comments to such posts were classified as being positive and posts highlighting drinking in a sociable, affirmative light also received significantly more "likes" than other posts [12]. A study examining substance use-related content on Myspace, Facebook, and YouTube also found the majority of students perceived such content to be humorous and/or viewed it favorably [17]. Hence, students who post pro-substance use content to social media are often publically and positively socially reinforced for doing so.

Such positive social validation for substance use-related posts (conveyed through "likes", shares, or comments) are likely to increase the frequency and intensity of students' addictive behavior-related displays over time [e.g., 18]. For instance, Moreno and colleagues [18] found that students displayed 40% more alcohol-related posts by the end of their freshman year than prior to entering college. Posts that were indicative of public intoxication/problematic drinking increased by nearly 20% during the first year of college. This is particularly concerning in that a number of studies have examined substance use displays and how it relates to users' self-reported consumption at the individual level and found positive associations between college students' substance use-related posts, such as alcohol [e.g., 8, 19, 10] and tobacco [e.g., 4] displays, and their self-reported outcomes (e.g., consumption, problems).

Furthermore, the positive reinforcement which students receive for their addictive behaviors-related posts may encourage and even perpetuate their risky behaviors. That is, some students may cultivate an online substance use-related personality, such as a drinking identity (e.g., portraying one's self as a binge drinker), because they anticipate receiving social approval for doing so [6]. Research has found that strategically presenting an aspect of one's identity in public spheres (e.g., projecting a drinker identity through frequent drink-related posts) is associated with greater internalization and continuation of behaviors in line with that persona [e.g., 20]. Thus, students who possess a drinker identity are more likely to increase their drinking motivations and intentions [7], engage in hazardous drinking [7], and, in turn, experience more alcohol-related consequences [6].

How Social Media Displays Influence College Students' Norms and Addictive Behaviors

Although students may mostly receive publically viewable, positive reinforcement for their pro-substance use displays, this does not necessarily mean that other students seeing such posts privately agree with their behaviors. Some students may avoid expressing negative attitudes about their friends' displays online because of incorrect assumptions that they themselves are in the minority. This effect, known as pluralistic ignorance, results in a silent majority incorrectly perceiving that others are actually engaging in addictive behaviors more than they actually are [21-23]. Along these lines, according to the false consensus effect [24, 25], individuals *overestimate* the degree to which others agree with/engage in the risky behavior. For example, heavier drinkers may continue posting pro-alcohol related content to social media because they perceive that doing so is "normal [6]." Conversely, lighter and moderate drinkers may refrain from expressing alternative (e.g., less positive) viewpoints both on and offline because they fear potential social ramifications.

Two between-subjects experimental studies have provided evidence that viewing substance use displays influences norms due to pluralistic ignorance. In one study, students viewed a fictitious Facebook user's profile which either contained alcohol-related content or did not contain alcohol-related content. College students who were in the alcohol-related content condition estimated higher college drinking norms than those in the non-alcohol-related condition [26]. In a second study, adolescents ranging in age from 13-15 were randomly assigned to view Facebook profiles depicting the majority of older high school peers (3 out of 4 profiles) using alcohol versus profiles depicting the minority of older high school peers

(1 out of 4 profiles) consuming alcohol. Greater exposure to Facebook profiles presenting more alcohol-related content significantly predicted adolescents' positive attitudes towards drinking and greater intentions to drink. The authors concluded that descriptive norms derived from social media often influence cognitions typically related to increases in drinking among adolescents [27]. Although the latter study involved an adolescent population, these effects are most likely applicable to other young adult populations, such as college students. Overall, this research indicate that exposure to pro-alcohol-related content on social media may contribute to young adults' misperceptions of prevalence and approval of drinking among peers as well as prompt them to cultivate more favorable attitudes toward drinking and greater drinking intentions.

Hence, a major, new direction for research is to elucidate how addictive behavior displays influence the internalization of norms about substance use among college students. The literature has long established that exposure to mainstream media (e.g., movies, television, ads) which prominently features substance use, such as pro-alcohol and pro-tobacco content, increases the likelihood that college students will also drink or smoke and be at greater risk for associated consequences [e.g., 28, 29]. Furthermore, peer influences have been identified as one of the strongest predictors of addictive behaviors such as drinking in college populations [e.g., 30]. According to social comparison theory [31], seeing closer referents, such as friends on social media engaging in an activity (e.g., seeing a picture of a friend smoking marijuana at a party), is more predictive of an individual's subsequent behaviors than distal referents (e.g., an actor smoking marijuana in a movie). Indeed, research has found that the merely viewing pro-substance use related content on social media has been linked to increased alcohol [9], marijuana [9], and tobacco consumption [32]. Because social media combines both elements of pro-substance use related media along with interactive, positive reinforcement from peers, exposure to addictive behaviors on social media, such as tobacco use, have been found to exert an even more powerful social influence on young adults' smoking behaviors than traditional television and movie influences [32].

In sum, the recent proliferation of social networking sites, has produced a new, distinct, and prominent sources of social influence, which emerging research suggests uniquely contributes to increases in substance use [e.g.,18, 6, 33, 9, 32]. This may be due to the fact that, in the digital age, students' substance use experiences offline may be encouraged and even heightened by continuing the conversation about these experiences online. Moreover, contact with these substance use displays may contribute to higher consumption among consumers of content because such displays propagate misperceptions regarding the prevalence and approval for the given addictive behaviors.

Traditionally, social norms interventions have been found to be efficacious in college populations in reducing addictive behaviors (e.g., drinking), particularly among heavy consumers [34-38]. Such interventions operate by correcting for misperceived norms by providing students with personalized normative feedback based on 1) their self-reported substance use behaviors, 2) their perceptions of others' substance use behaviors, and 3) the actual descriptive norm (e.g., university-specific substance use behaviors) [39, 30]. Thus, we believe an important future direction for this line of research is to devise a social media-related personalized feedback intervention aimed at lowering college students' problematic

substance use. However, there are some important and distinct technical and methodological challenges generally inherent to conducting this type of research and to the development of this or any type of substance use display intervention, which need to be considered.

Intrinsic Challenges to Substance Use Display Research and Related Interventions

First and foremost, one of the challenges in conducting this type of research is to keep up with the ever-changing social media landscape in order to determine which platforms are generally favored by young adults and college students. This age group tends to quickly migrate to new platforms while abandoning others or agglomerating on existing platforms depending on which features are trending at the moment. In 2013, the Pew Research Center identified Facebook, Twitter, Instagram, Youtube, and Tumblr as the top six social networking sites frequented by teens [40]; however, just two years later , the list included: Facebook, Instagram, Snapchat, Twitter, and Google+ but Myspace and Youtube were no longer listed as frequented mediums.

A second major challenge is to decide which social media platform might be suitable for the particular intervention or research question. Youths typically possess more than one social media account [41] and each social networking site offers different features in order to attract users. For instance, Twitter allows users to engage in conversations, often with a broader communities of users than other platforms. Many users are followed by or are followers of individuals whom they do not have an offline connection with (e.g., public figures, celebrities), which may provide users with some semblance of anonymity. Because content is typically publically available, Twitter affords researchers the chance to study large-scale, epidemiological substance use trends within a broader population [5]. Moreover, researchers who are interested in studying seemingly anonymous substance use displays, might consider studying substance use displays on Yik Yak. This location-based social networking site allows users to communicate inner, sometimes forbidden thoughts and behaviors, to people currently nearby, up to a 1.5-mile radius[42], under a shroud of complete anonymity. Thus, college students might be more likely to post about their illicit substance use behaviors on Yik Yak. However, to our knowledge, no studies have examined substance use displays on Yik Yak, perhaps due to the fact it is not as popular as other forums.

As previously mentioned, Facebook still appears to be the frontrunner in terms of usage among teens [41] and college students [1]. This is perhaps due to the fact that 1) the majority of youths know most of their Facebook friends personally offline and 2) Facebook allows them to simultaneously funnel content they posted to other social networking sites to their Facebook account. For instance, pictures users post to Instagram may be synchronously posted to their Facebook newsfeed. Similar to Facebook, students generally know most of their followers on Instagram although social networks tend to be smaller on Instagram since it is less mainstream than Facebook (e.g., 72% of online users who have attended some college use Facebook versus 32% of online users who have attended some college use Instagram, [43]); thus, we believe that Instagram might be eventually eclipse Facebook in popularity among college students because college students' older family members are less likely to request to follow them on Instagram as opposed to Facebook. Instagram is also a

more picture driven medium than Facebook. Its popularity lies in its ability to provide users with the ability to modify or embellish posted photos through the use of filters. Thus, a picture of a cocktail near the beach may appear more visually alluring through an Instagram filter. Finally, although Snapchat allows users to post images publically, the site's true appeal lies in its ability to provide college students with the opportunity to share fleeting images, often directly to smaller, private networks. Because content typically disappears within a matter of seconds, college students may be more apt to share "snaps" of "getting high" or instances where they or others friends are severely intoxicated with close friends on Snapchat because they are less concerned about creating a lasting visual record of such behavior.

Results of recent studies suggest that college students might be posting more substance use-related content on social media sites where they might have smaller networks or a more exclusive networks of friends/followers. For instance, a recent study found that college students are more likely to post alcohol-related content on Facebook as opposed to Twitter [2]. However, another study which compared and contrasted alcohol-related content posted to Facebook, Instagram, and Snapchat found that college students were more likely to post alcohol-related to Snapchat and Instagram as opposed to Facebook [3]. Although it is often necessary to choose one platform (often the most popular one) over another when devising social media-related interventions, the authors argued that prevention efforts might be obstructed or even stymied if researchers overlook alcohol-related content posted to Instagram or Snapchat in favor of Facebook.

Finally, how research is conducted is often dictated by the sites that researchers choose to focus on. Platforms with more enduring content such as Twitter, Facebook, and Instagram allow researchers to code textual and visual content as opposed to relying solely on self-reports. The primary advantage of coding is that it may be more objective than self-reported behavior. However, the disadvantages of coding is that it is more time consuming, often requires a greater, more in-depth level of expertise (e.g., trained coders), is generally more conservative than self-reports [44], and may not capture college students' inferences regarding others' substance use behaviors posted to social media. For instance, researchers often will not classify images of students holding red solo cups at a party as an alcohol-related display unless the accompanying text makes it explicit that students are consuming alcohol [44]; however, based on their knowledge of the behavioral patterns of people in the photo, college students might assume that certain friends are drinking if they are in possession of red solo cups.

On the other hand, mediums such as Snapchat and Yik Yak are popular because of the ephemeral nature of content posted their site. That is, a major part of the appeal of these sites is that the content is fleeting, and seemingly untraceable. In fact, most college students might view the ability to track behaviors on these mediums as running counter to their intended purpose; thus, when studying these types of mediums, researchers may be forced to rely solely self-reports. The primary advantages of self-reports is that collecting data is not as labor intensive as coding and relies on college students' perceptions of other university students' behaviors, which is often more influential on than actual behaviors. However, the disadvantages of self-reports are that there are currently no standardized measures which

exist, they tend to be more biased than coding, and students might not be as forthcoming about their or their friends' illicit or illegal substance use displays. One possible way to mitigate the latter point is to see whether providing students with the opportunity to provide self-reports anonymously differs substantially from self-reports in which students are readily identifiable. Additionally, an important future direction would be to create reliable, standardized assessments in which actual substance use behaviors (e.g., coded behaviors) which are highly correlated with self-reported behaviors.

Conclusion

Students are increasingly relying on social media to communicate with one another about their substance use experiences, even though such postings often breed misperceptions regarding acceptance and prevalence of addictive behaviors. This might be exacerbated by social media users' reluctance to post dissenting viewpoints. Moreover, the literature generally indicates that college students' substance use displays uniquely influence not only the posters' substance use-related outcomes (e.g., consumption, problems) but also that of their social networking peers. Although there are substantial challenges innate to conducting this type of research, we believe that it is imperative that researchers continue striving to devise interventions targeting these substance use display misperceptions in order to lower consumption among this at-risk population.

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