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Evaluating college students' displayed alcohol references on Facebook and Twitter

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Abstract

Purpose—Current trends suggest adolescents and young adults typically maintain a social media “portfolio” of several sites including Facebook and Twitter, but little is known regarding how an individual chooses to display risk behaviors across these different sites. The purpose of this study was to investigate college students' displayed alcohol references on both Facebook and Twitter.

Methods—Among a larger sample of college students from two universities, we identified participants who maintained both Facebook and Twitter profiles. Data collection included evaluation of 5 months of participants' Facebook and Twitter posts for alcohol references, number of social connections (i.e. friends or followers) and number of posts. Phone interviews assessed participants' frequency of Facebook and Twitter use and self-reported alcohol use. Analyses included Fisher's exact test, Wilcoxon matched pair sign test, Freidman rank-sum tests and logistic regression.

Results—Of 112 eligible participants, 94 (RR=84.8%) completed the study. Participants were more likely to display alcohol references on Facebook compared to Twitter (76% versus 34%, $p=0.02$). Participants reported more social connections on Facebook versus Twitter (average 801.2 friends versus 189.4 followers, $p<0.001$), and were more likely to report daily use of Facebook versus Twitter (94.6% versus 50%, $p<0.001$). Current alcohol use was predictive of both Facebook and Twitter displayed alcohol references, but mediators differed in each model.

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Conflict of Interest

No authors have conflicts of interest to report.

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Discussion—College students were more likely to display alcohol references on Facebook compared to Twitter. Understanding these patterns and predictors may inform prevention and intervention efforts directed at particular social media sites.

Keywords

college student; alcohol; Facebook; Twitter; social media; internet; mixed-methods

INTRODUCTION

Alcohol is the most commonly used substance by college students.[1, 2] Underage drinking is a major contributor to all 3 leading causes of death for this age group: unintentional injury, homicide and suicide.[3] Almost half of US high school graduates transition to college after high school,[4, 5] and rates of problem drinking are higher among college students compared to non-college attending peers.[6] Thus, college students represent a key population for alcohol prevention and intervention efforts.

One novel approach to alcohol prevention efforts may be via social media. Previous studies have investigated college students' displayed alcohol references on Facebook and found prevalence to be between 37% and 85%.[7–10] Further, displayed alcohol references have positive associations with self-reported alcohol behaviors.[11, 12] While previous studies have focused on evaluation of alcohol references on a single social media site,[13–15] the recent Pew Internet and American Life Project report illustrates that today's youth typically maintain more than one social media profile.[16] Among the most popular sites in this social media “portfolio” are Facebook and Twitter.[16, 17] Both sites allow users to connect to others by friending or following profiles, which allows users to build social capital through creating social networks.[18–20] Facebook users typically connect to people known in offline life, and use privacy settings to limit the audience for their displayed content to their friends.[21] In contrast, on Twitter content is typically shared publicly and it is normative for users to follow individuals they have never met, such as celebrities and politicians.[22] A previous study found that users understood that Facebook and Twitter presented them with different audiences for their displayed content, supporting youth's attention to differences in social media site culture and affordances.[23]

Health-related content displayed on social media is important from a clinical and public health standpoint. The positive association between displayed Facebook alcohol references and self-reported behavior suggests this site could be used to identify at-risk students who may benefit from clinical evaluation.[12, 14] Further, there is potential for evaluating large-scale epidemiologic trends in health behaviors or illnesses using publicly available data on Twitter.[24, 25] To move the field forward, a better understanding of how users display content and interact differently with particular sites is needed so that epidemiologic data can be appropriately interpreted, and intervention efforts can be targeted to the most appropriate social media venue.

Given that the majority of college students now maintain more than one social media profile, a gap exists in understanding how individual students choose to display health risk behaviors across different social media sites. The purpose of this study was to determine the

prevalence of displayed alcohol references on two social media sites: Facebook and Twitter, among a cohort of college students from two universities. To understand the context of displayed alcohol references on each site, we also compared the number of social connections via friending and following, and frequency of use of these two sites. Finally, we investigated associations between self-reported current alcohol use and displayed alcohol references on each site.

METHODS

This study evaluated displayed alcohol references on Facebook and Twitter using content analysis, and self-reported alcohol behaviors and frequency of Facebook and Twitter use via participant interviews. Study sites included two large state universities, one in the Midwest and one in the Northwest. Data for this study was collected between May 13, 2013 and June 7, 2014. This study received approval from the two relevant Institutional Review Boards.

Participants

Incoming first-year students at the two participating universities were recruited in 2011 for a longitudinal study of social media and substance use. Potential participants were randomly selected from the registrar's lists of incoming first-year students from both universities for recruitment. Interviewers assessed participant's eligibility with inclusion criteria between the ages of 17 and 19 years, enrolled as a first-year student at one of these two universities, primary language of English and maintained a Facebook profile.

Recruitment and social media connection

Students were recruited through several steps, including emails, phone calls and Facebook messages. During the consent process, potential participants were informed that this was a longitudinal study involving phone interviews and Facebook friending a research team profile. Participants were informed that their Facebook profile content would be viewed, but that no content would be posted on the participant's profile. Participants were asked to maintain open security settings with the research team's Facebook profile for the duration of the study, though the study team did not monitor participant privacy settings.

Yearly phone interviews with all participants assessed whether they were regular users of several social media sites. The 2013 interview took place between May and August, participants were provided an incentive of \$40 for completing their yearly interview. From these interviews we identified a subset of 112 eligible participants (33% of full study sample) who maintained a Twitter profile. We contacted these participants, explained the study and obtained consent. We then requested to follow participants on Twitter using our study Twitter page, applying the same conditions as with friending on Facebook.

Social media coding

Measures—We used our standard content analysis process to evaluate displayed alcohol references, described in previous publications.[7, 26, 27] Profiles with one or more references to alcohol attitudes, intentions or behaviors were considered “Alcohol Displayers.” Example references included personal photographs in which the profile owner

was drinking from a labeled beer bottle, text references describing intention to consume alcohol at a party, or Facebook “Likes” including alcohol brands. Only photographs that contained the profile owner with a clearly labeled alcoholic beverage were included; thus, ambiguous containers were not considered alcohol references. Profiles without any alcohol references were considered “Non-Displayers.”

Social media connections were evaluated on both Facebook and Twitter. On Facebook, evaluations were conducted monthly as part of the ongoing study; thus, the number of friends for each of the 5 months coded was averaged across the 5 months. On Twitter, the number of Followers and Following were recorded at the time of evaluation for this study. Posting frequency was evaluated by calculating the number of profile owner generated status updates on Facebook and profile owner’s tweets on Twitter for one month across both sites.

Coder training to identify displayed alcohol references—Facebook coder training began with a trainee reviewing an established coding manual[27] and observing trainers. Trainee coders then progressed to supervised preliminary coding with training datasets, coded data was reviewed with trainers. Once competency was achieved through evaluation of inter-rater reliability on practice datasets, coders began assessing Facebook study data. Initial coder training lasted approximately 6–8 weeks. For ongoing training, weekly meetings of all six coders provided opportunities to review key coding rules and discuss difficult cases. Inter-rater assessments were conducted across all coders by evaluating a sample of 10% of study profiles over a 3 month period each year using Fleiss’ kappa.

Three coders who had achieved competency in Facebook coding and had a minimum 4 months of coding experience underwent additional training to code Twitter profiles. We used similar processes outlined above including preliminary Twitter coding using practice datasets and ongoing group meetings to resolve difficult cases.

Coding procedure—We evaluated 5 months of data during the 2013–2014 academic year on both Facebook and Twitter. Months were selected to be representative of the general academic year for both the quarter and semester school systems. Thus, we selected two months during the fall quarter/semester and three during the spring quarter/semester, avoiding the December holiday season.

During each profile evaluation, coders systematically evaluated the profile to assess whether displayed alcohol references were present. Extrapolated data from the profile included either a typewritten description of any images or verbatim text from profiles, and the date of the display. Identifiable information such as names was not recorded. A customized secure FileMaker® database was used to record all data.

Facebook profile locations that were evaluated included: 1) the Facebook Wall including status updates and wall posts, 2) photographs including albums, tagged photographs, profile pictures and cover photographs, 3) Likes section which included businesses and groups the participant had “liked” and 4) the profile’s “About me” section. Twitter profile locations that were evaluated included: 1) the Twitter feed of “tweets” including text, photographs or links,

as well as “re-tweets” (or shares of another’s tweet) and “directed tweets” (replies or comments on another’s tweet), and 2) the profile’s “About me” section.

Interview

Measures—Interviews assessed social media use; participants were asked the frequency with which they visited Facebook and Twitter. Answer options included daily, weekly, monthly, yearly or less than yearly. For participants who indicated daily use, we asked for the typical number of times each day the site was visited.

Interviews assessed current alcohol use, defined as past 28-day alcohol use,[28] with the question: “Have you had a drink of alcohol in the past 28 days?” For participants who reported past 28-day alcohol use, we used the validated TimeLine FollowBack (TLFB) method to determine quantity and frequency of alcohol consumption in the last 28 days.[28] The TLFB process involves working with a participant to review each day of the past 28 days to assess how many standard alcohol drinks were consumed.[29] We summed the total number of drinks in the past 28 days for each participant as an outcome measure.

Interviews assessed demographic data including age, gender, ethnicity/race and university.

Interview procedure—Phone interviews were conducted with all participants by trained staff at a time convenient for the participant. Interview data was recorded using a FileMaker® database.

Analysis

Statistical analyses were conducted using the statistical program R (Vienna, Austria). To compare demographic differences between Twitter users and non-users in the larger study sample we used a Chi square test. Among our 94 participants who used both sites, we compared the prevalence of profiles with displayed alcohol references on Facebook to Twitter using Fisher’s exact test,[30] and compared the number of displayed alcohol references on Facebook and Twitter using a Wilcoxon matched pair sign test.

To compare participants’ social connections we evaluated the median number of Facebook friends or Twitter followers/following across the 5 months evaluated. We used a non-parametric ANOVA equivalent, the Friedman rank-sum test,[31] to determine if at least two of these three types of social connections were significantly different from each other. A post-hoc pairwise comparison was then used to compare each of these three to each other; *p* values were adjusted with a Holmes correction to control for family-wise error rate.[32] We also calculated participants’ difference in Facebook friends and Twitter followers, and tested if this difference depended on gender, race or university using Wilcoxon sign tests.

To assess social media use we calculated the median number of Facebook status updates and Twitter tweets across the 5 months of data collection and compared these using a Wilcoxon matched pair sign test.[30] We calculated participants’ difference in status updates and tweets, and tested if this difference depended on gender, race or university using Wilcoxon sign tests. We compared the proportion of participants who reported daily use of Facebook

or Twitter using a Chi square test. We also used Chi square tests to separately test if daily use of each site depended on gender, race or university.

To determine associations between current alcohol use and displayed alcohol references on Facebook and Twitter we used two approaches. Our first approach used logistic regression to understand current alcohol use as a predictor of displayed alcohol references. In order to understand whether predictors for each site may differ, we developed separate models for Facebook and Twitter. Given the small sample size, we used stepwise backward elimination[33] to select a parsimonious subset of variables for each model. This approach is an automated method to select the smallest subset of variables which best explained the variation in displayed alcohol references while allowing control for confounding variables. Based on the sample size and prevalence of displayed alcohol, applying this method restricted predictor variables to a maximum of four. Thus, our four tested predictor variables included gender, university, current alcohol use and whether the participant was a daily user of the site.

Our second approach was exploratory and had the goal of understanding whether the number of drinks in the past 28 days calculated via the TLFB was correlated with the number of displayed alcohol references. Because the data was non-parametric we used Spearman correlation coefficient as a measure of correlation.

RESULTS

A total of 338 participants were enrolled in the ongoing longitudinal study, 56.1% were female, 74.8% were Caucasian and 58.8% were from the Midwest university. Our initial response rate was 54.6% and after two years our retention rate was 98.5%. Of our 112 eligible participants for this study who reported having a Twitter profile, 95 (response rate 84.8%) agreed to participate. One participant deactivated his Facebook profile, thus, our final sample consisted of 94 participants (Table 1). These 94 participants were not statistically different from those who reported that they did not own a Twitter profile at the time of data collection regarding gender ($p=.11$), university ($p=.08$) or race ($p=.52$).

Displayed alcohol references on Facebook and Twitter

Participants were more likely to display alcohol references on Facebook compared to Twitter (76% versus 34%, respectively: $p=.02$) (Table 2). Among participants who displayed alcohol references on Twitter, 9.4% of participants displayed exclusively on Twitter while the majority (91%) of Twitter displayers also displayed on Facebook. Participants displayed an average of 3.6 (SD=8.5) more alcohol references on Facebook than on Twitter ($p<.001$). Examples of displayed alcohol content included text descriptions such as “Shouldn’t have had that fifth margarita...” and photograph displays showing participants drinking alcohol-containing beverages in settings such as parties or sports events. For Facebook coding, Fleiss’ kappa was 0.78 for presence or absence and 0.75 for agreement for number, indicating substantial agreement. Because of the small number of displayed alcohol references on Twitter, inter-rater agreement was calculated and was 96%.

Social media connections and use

Assessment of social media connections revealed that participants had an average of 801.2 (SD=381.1) friends on Facebook. On Twitter, participants had fewer social connections, including following a mean of 189.4 (SD= 153.2) other accounts and being followed by a mean of 150 (SD= 152.5) accounts (each adjusted $p<.001$). The number of social connections on Facebook and Twitter was not significantly different by gender ($p=.47$), university ($p=.97$) or race ($p=.95$).

Facebook posting frequency was an average of 5 (SD=7.9) status updates per month, compared to an average of 16.5 (SD=36.5) tweets per month on Twitter ($p=0.01$). The number of social media posts (i.e. Facebook status updates and Twitter tweets) was not significantly different by gender ($p=.14$), university ($p=.15$) or race ($p=.81$).

Interview data revealed that the vast majority of participants reported daily use of Facebook (94.6%) compared to only half reporting daily use of Twitter (50%) ($p<0.001$). However, for participants who reported daily use of either site, reported frequency of logins per day was similar (Table 3). There were no statistically significant differences between participants' reported daily use on Facebook versus Twitter by gender ($p=1$), university ($p=.19$) or race ($p=1$).

Associations between self-reported current alcohol use and displayed alcohol references

A total of 76 (80.6%) participants reported current alcohol use, and these participants had an average of 24.8 (SD=21.6) drinks in the last 28 days. Among these 76 participants, 36.8% displayed references to alcohol on both Facebook and Twitter, while 43% displayed alcohol references on Facebook only. Only 2.6% of participants displayed references to alcohol on Twitter only, while 17.1% of participants did not display references to alcohol on either site.

To understand predictors of displaying alcohol references on social media, we assessed Facebook and Twitter separately. For Facebook, significant variables that remained in the model included current alcohol use and university. Current alcohol users were more likely to display alcohol references on Facebook (OR=3.4, 95% CI: 1.07 – 10.7, $p=.04$) compared to non-drinkers. For Twitter, significant variables that remained in the model included current alcohol use, university, gender, and being a daily visitor of Twitter. Current alcohol users were more likely to display alcohol references on Twitter (OR 5.8, 95% CI: 1.3–41.4, $p=.04$); daily login to Twitter was also significantly associated with increased likelihood of displayed alcohol references on Twitter (Table 4).

To understand associations between the number of drinks in the past 28 days and number of displayed alcohol references, we also assessed Facebook and Twitter separately. For Facebook, we found that number of Facebook alcohol reference displays was moderately and positively correlated with number of drinks (Spearman $Rho=.42$, $p<.001$). For Twitter, we found that number of Twitter alcohol reference displays demonstrated low but positive correlation with number of drinks (Spearman $Rho=.23$, $p=.025$).

DISCUSSION

This study investigated displayed alcohol references on two social media sites: Facebook and Twitter, among a cohort of college students from two universities. From a larger study sample, we identified participants who reported use of both Facebook and Twitter for this investigation. We found that Twitter ownership in our larger sample (33%) was consistent with recent findings in which 31% of young adult internet users reported Twitter use.[17]

Our main finding was that participants were more likely to display alcohol references on Facebook compared to Twitter. We also found that Facebook users were more likely to be engaged in this site through a large social network and daily log-ins; thus, displayed alcohol references on Facebook were available to an audience of friends who were likely to see them soon after posting. Twitter profile owners reported a variety of use frequency, with some participants logging in infrequently and others quite regularly. Participants who chose to display alcohol references on Twitter were more likely to be daily Twitter users.

These findings provide new insights into understanding epidemiologic studies that illustrate displayed alcohol content on Facebook and Twitter. There has been significant growth in studies that utilize social media surveillance, particularly studies using epidemiologic assessments of health behaviors on Twitter.[24, 25, 34] Our findings suggest that research studies focused on Twitter displays are likely to collect data from a focused population of frequent Twitter users. Among college students, displayed alcohol on Twitter likely represents a small proportion of students who selectively display risky content on this site.

These findings may be placed in the context of an Affordance approach. Affordances are defined as properties of objects, platforms or websites that can be recognized by users and contribute to their function.[35, 36] For example, it could be argued that 5 affordances that a social media site offers include an online identity, a communication platform, a social network, an information source and an entertainment venue. If college students are interested in displaying alcohol content to friends, Facebook may be a preferred platform because it has one's personal identity as a key feature (given that Facebook user profiles use their full name) compared to Twitter. Further, since Facebook friends are often people one knows, and Twitter followers can include celebrities and politicians, it may be more compelling to place displayed alcohol content in one's known social network. Thus, findings suggest that intervention efforts that include strong ties to identity or a trusted social network may be better placed within Facebook. Intervention efforts that rely on distribution of information across a wide audience of users may find Twitter more useful.

There are several limitations to our study. First, despite our request for participants to maintain open Facebook and Twitter security settings with our profile, some participants may have hidden content which we could not detect. Further, this study involved viewing both Facebook and Twitter profiles; response bias may have favored recruitment of participants who were willing to make this content available. Second, though we included two large universities in this study with varied locations and student profiles, there was limited racial diversity present. Although the sample represented the diversity present in the schools from which we recruited, our findings may not be generalizable to other institutions.

Third, because Facebook coding was conducted monthly as part of an ongoing study, and Twitter coding was conducted in one evaluation, we were not able to track monthly changes in Twitter followers. Fourth, our study utilized self-reported alcohol behavior measures, which may be subject to social desirability or recall bias. Fifth, because of the small proportion of participants who solely displayed alcohol content on Twitter, we were unable to conduct combined models including both Facebook and Twitter displays. Finally, our study focused on students who maintained both Facebook and Twitter profiles and is thus not meant to be generalizable to the larger student population.

Our study purposefully focused on the population of students who use both Facebook and Twitter in order to evaluate profiles on both sites from each study participant. Our results using both online and offline data from both Facebook and Twitter suggest the clinical validity and value of interventions and surveillance are not equal across these two popular social media sites. Future studies may consider these findings in interpretation of epidemiologic studies and designing future targeted public health efforts.

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Abbreviations

TLFB TimeLine FollowBack

References

1. Cooper ML. Alcohol use and risky sexual behavior among college students and youth: evaluating the evidence. *J Stud Alcohol Suppl.* 2002;14:101–17. [PubMed: 12022716]
2. Hingson R, et al. Magnitude of alcohol-related mortality and morbidity among U.S. college students ages 18–24: changes from 1998 to 2001. *Annu Rev Public Health.* 2005; 26:259–79. [PubMed: 15760289]
3. Miller JW, et al. Binge drinking and associated health risk behaviors among high school students. *Pediatrics.* 2007; 119(1):76–85. [PubMed: 17200273]
4. Bureau, U.C. College Enrollment. US Census Bureau; Washington, DC: 2007.
5. Arnett, JJ. The road to college: Twists and turns. In: Arnett, JJ., editor. *Emerging adulthood: The winding road from the late teens through the twenties.* Oxford Press; New York: 2004. p. 119-141.
6. Barnes GM, et al. Comparisons of Gambling and Alcohol Use Among College Students and Non-College Students in the U.S. *Journal of American College Health.* 2014; 58(5):443–452.
7. Egan KG, Moreno MA. Alcohol References on Undergraduate Males' Facebook Profiles. *Am J Mens Health.* 2011;413–420. [PubMed: 21406490]
8. Egan KG, Moreno MA. Prevalence of Stress References on College Freshmen Facebook Profiles. *Comput Inform Nurs.* 2011
9. Moreno MA, et al. Display of health risk behaviors on MySpace by adolescents: Prevalence and Associations. *Archives of Pediatrics and Adolescent Medicine.* 2009; 163(1):35–41. [PubMed: 19124701]
10. Van Hoof JJ, Bekkers J, Van Vuuren M. Son, you're smoking on Facebook! College students disclosures on social networking sites as indicators of real-life behaviors. *Computers and Human Behavior.* 2014; 34:249–257.

11. Moreno MA, et al. Associations between social media displays and event-specific alcohol consumption by college students. *Wisconsin Medical Journal*. 2014; 112:251–256.
12. Moreno MA, et al. Associations between displayed alcohol references on facebook and problem drinking among college students. *Arch Pediatr Adolesc Med*. 2011; 166(2):157–63. [PubMed: 21969360]
13. Moreno MA, et al. Associations between displayed alcohol references on facebook and problem drinking among college students. *Archives of Pediatrics & Adolescent Medicine*. 2012; 166(2): 157–163. [PubMed: 21969360]
14. Moreno MA, et al. Underage College Students' Alcohol Displays on Facebook and Real-Time Alcohol Behaviors. *Journal of Adolescent Health*. 2015; 56(6):646–651. [PubMed: 26003580]
15. Cavazos-Rehg P, et al. "Hey Everyone, I'm Drunk." An Evaluation of Drinking-Related Twitter Chatter. *Journal of Studies on Alcohol and Drugs*. 2015; 76:635–43. [PubMed: 26098041]
16. Lenhart, A. *Teens, Social Media & Technology Overview 2015*. Pew Internet and American Life Project; 2015.
17. Duggan, M., et al. *Social Media Update 2014*. Pew Internet and American Life Project; Washington, DC: 2014.
18. Ellison NB, Steinfield C, Lampe C. Connection strategies: Social capital implications of Facebook-enabled communication practices. *New Media & Society*. 2011; 13(6):873–892.
19. Steinfield C, Ellison NB, Lampe C. Social capital, self-esteem, and use of online social network sites: A longitudinal analysis. *Journal of Applied Developmental Psychology*. 2008; 29(6):434–445.
20. Valenzuela S, Park N, Kee KF. Is There Social Capital in a Social Network Site?: Facebook Use and College Students' Life Satisfaction, Trust, and Participation. *Journal of Computer-Mediated Communication*. 2009; 14(4):875–901.
21. Madden, M., et al. *Teens, social media and privacy*. Pew Internet and American Life Project; Washington, DC: 2013.
22. Smith, A. *Twitter Update 2011*. Pew Internet and American Life Project; Washington, DC: 2011.
23. Choi H, Bazarov BG. Self-Disclosure Characteristics and Motivations in Social Media: Extending the Functional Model to Multiple Social Network Sites. *Human Communication Research*. 2015; 41(4):480–500.
24. Cavazos-Rehg PA, et al. Twitter chatter about marijuana. *J Adolesc Health*. 2015; 56(2):139–45. [PubMed: 25620299]
25. Signorini A, Segre AM, Polgreen PM. The Use of Twitter to Track Levels of Disease Activity and Public Concern in the U.S. during the Influenza A H1N1 Pandemic. *PLoS One*. 6(5):e19467.
26. Moreno MA, et al. A Content Analysis of Displayed Alcohol References on a Social Networking Web Site. *J Adolesc Health*. 2010; 47(2):168–75. [PubMed: 20638009]
27. Moreno MA, Egan KG, Brockman L. Development of a researcher codebook for use in evaluating social networking site profiles. *J Adolesc Health*. 2011; 49(1):29–35. [PubMed: 21700153]
28. Sobell, L., Sobell, M. TimeLine Follow-Back: A technique for assessing self-reported alcohol consumption. In: Litten, R., Allen, J., editors. *Measuring Alcohol Consumption*. Humana Press; Totowa, New Jersey: 1992. p. 41-72.
29. Devos-Comby L, Lange JE. Standardized measures of alcohol-related problems: a review of their use among college students. *Psychol Addict Behav*. 2008; 22(3):349–61. [PubMed: 18778128]
30. Wilcoxon F. Individual comparisons by ranking methods. *Biometrics Bulletin*. 1945; 1(6):80–83.
31. Friedman M. A comparison of alternative tests of significance for the problem of m rankings. *Annals of Mathematical Statistics*. 1940; 11(1):86–92.
32. Holm S. A simple sequentially rejective multiple test procedure. *Scandinavian Statistical Theory*. 1979; 6(2):65–70.
33. Weisberg, S. *Applied Linear Regression*. New Jersey: John Wiley and Sons; 2014.
34. Cavazos-Rehg P, et al. Characterizing the followers and tweets of a marijuana-focused Twitter handle. *Journal of Medical Internet Research*. 2014; 16(6):e157. [PubMed: 24974893]
35. Zhao YX, et al. Conceptualizing perceived affordances in social media interaction design. *Aslib Proceedings*. 2013; 65(3):289–302.

36. Halpern D, Gibbs JL. Social media as a catalyst for online deliberation? exploring the affordances of facebook and YouTube Computers in Human Behavior. 2013; 29(3):1159–1168.

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Implications and Contribution

College students who maintained both Facebook and Twitter profiles were recruited, profiles were evaluated for displayed alcohol references over five months. Alcohol references were more common on Facebook compared to Twitter. Findings may assist investigators in making data-driven decisions about future intervention platforms.

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Table 1

Demographics of 94 college student participants who maintained a both Facebook and Twitter profile

	n(%)
Gender	Female: 60 (63.8%)
	Male: 34 (36.2%)
Race/Ethnicity	Caucasian: 73 (77.7%)
	Asian: 8 (8.5%)
	More than one race: 6 (6.4%)
	African American/Black: 4 (4.4%)
	Hispanic: 2 (2.1%)
	East Indian: 1 (1.1%)
University	Northwest: 33 (35.1%)
	Midwest: 61 (64.9%)

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Table 2

Distribution of 94 college student participants and alcohol display category across Facebook and Twitter profiles

<i>Cell Contents: N/94 participants N/Row Total N/Column Total</i>	Twitter		<i>Row Total⁺</i>
	No alcohol displays	Alcohol displays	
No alcohol displays	21% (n=20) 87% 32.3%	3.2% (n=3) 13% 9.4%	25% (n=23)
Facebook Alcohol displays	45% (n=42) 59.2% 67.7%	31% (n=29) 40.8% 90.6%	75% (n=71)
<i>Column Total</i>	66% (n=62)	34%(n=32)	94

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Table 3

Summary of social connections and frequency of posting on Facebook and Twitter among college student participants who use both sites

<i>n</i> =94	<i>Data from social media profiles</i>		<i>Data from self-report via interviews</i>		Among non-daily users, frequency of visiting the site
	Social Connections*	Status updates/Tweets	Participants who report daily use n(%)	Among daily users, reported number of visits/day	
Facebook	Friends: Mean: 801.2 Median: 742 SD: 381.1 Min: 0 Max: 2014	Status updates: Mean: 5 Median: 3 SD: 7.9 Min: 0 Max: 54	Daily visits: 88 (94.6%) Non-Daily: 5 (5.4%)	Visits/day: Mean: 4.2 Median: 3	Visit frequency: Weekly: 5 (100%)
Twitter	Following: Mean: 189.4 Median: 160.5 SD: 153.2 Min: 2 Max: 713 Followers: Mean: 150 Median: 100.5 SD: 152.5 Min: 3 Max: 1003	Tweets: Mean: 16.5 Median: 3 SD: 36.5 Min: 0 Max: 238	Daily visits: 47 (50%) Non-Daily: 47 (50%)	Visits/day: Mean: 5.4 Medi: 4	Visit frequency: Weekly: 27 (57.4%) Monthly: 9 (19.1%) Yearly: 2 (4.3%) Less than yearly: 9 (19.1%)

* Social media data collected over 5 month period

Table 4

Current alcohol use as a predictor for displayed alcohol references on Facebook and Twitter among participants who use both sites

Facebook			
<i>Predictor variables</i>	<i>Odds Ratio</i>	<i>95% CI</i>	<i>p-value</i>
Current alcohol use	3.4	1.07 – 10.7	.04
University (Midwest)	3.4	1.3 – 9.5	.02
Twitter			
<i>Predictor variables</i>	<i>Odds Ratio</i>	<i>95% CI</i>	<i>p-value</i>
Current alcohol use	5.8	1.3–41.4	.04
University (Midwest)	2.6	.9–8.4	.08
Gender (Male)	0.4	.13–1.08	.08
Social Media- Daily Twitter Visitor	3.7	1.41–10.6	.0096

* Analyses used backwards stepwise logistic regression