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Exploring Ways to Enhance Teens' Participation in Social Media Interventions: A Formative Research Study

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EXPLORING WAYS TO ENHANCE TEENS' PARTICIPATION IN SOCIAL
MEDIA INTERVENTIONS: A FORMATIVE RESEARCH STUDY

BY

HAILEE K. DUNN

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

IN

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DOCTOR OF PHILOSOPHY DISSERTATION

OF

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2017

ABSTRACT

Social networking sites (SNSs) now serve as a primary form of socialization for adolescents. A growing body of research indicates that permissive drinking norms exist on online just as they do offline increasing teens' risk for underage drinking and other risk behaviors. However, limited research exists on how to address this growing public health problem. The purpose of the present study was to conduct a formative investigation on how to create substance prevention interventions that address adolescents' exposure to normative displays of substance use on SNSs. Thirty-three adolescents in grades nine through twelve were recruited from various school- and community-based youth groups involved in the Rhode Island Strategic Prevention Framework Partnerships for Success Project (SPF-PFS) which is a five-year federally funded grant aimed at reducing underage drinking and marijuana use. Four semi-structured focus groups were conducted on how to create substance prevention campaigns delivered through SNSs that successfully reach and engage adolescents in the message diffusion process. Focus groups were immediately followed by a brief self-administered questionnaire that collected information on adolescents' social media use. Two manuscripts are presented within. The first manuscript explores how psychosocial determinants influence teens' decisions to participate in substance prevention campaigns delivered through SNSs while the second manuscript investigates the extent to which adolescents acquired social media literacy skills as a result of participating in the focus groups. Results indicate that while substance prevention social media campaigns have the potential to reach a vast audience of young people, they are difficult to implement because the social costs of online

engagement outweigh the benefits for many teens. In contrast, study findings suggest that focus groups are a viable method for delivering social media literacy interventions and may serve as a promising alternative for addressing adolescents' exposure to online drinking norms and other risk behaviors.

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PREFACE

This dissertation was prepared in manuscript format. The first manuscript has been submitted to the *Journal of Primary Prevention* whereas the second manuscript will be submitted to the *Journal of Media Literacy Education*.

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MANUSCRIPT 1

“Psychosocial Determinants of Teens’ Online Engagement in Substance Prevention
Social Media Campaigns: Implications for Public Health Organizations”

by

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Abstract

Social networking sites (SNSs) now serve as a primary form of communication among adolescents. Consequently, substance prevention campaigns delivered through SNSs have the potential to reach a wide network of adolescents if teens are willing to engage in the message diffusion process by commenting on, “liking”, following, creating, and/or sharing prevention messages with their online peers. However, little is known about the psychosocial factors that influence adolescents’ willingness to participate in substance prevention social media campaigns. The present study used a triangulated mixed methods design to explore reasons adolescents may or may not want to engage in the message diffusion process. Four semi-structured focus groups were conducted with a total of thirty-three high school students from various school- and community-based youth groups in Rhode Island. Focus groups were followed by a brief self-administered questionnaire on social media use to corroborate qualitative findings. Findings revealed that teens’ willingness to engage in the message diffusion process is influenced by a number of intra- and interpersonal factors including: a) pre-existing attitudes and behaviors related to substance use, b) concerns about violating online peer norms (e.g. appearing “uncool”) including perceived impact on social status and peer relationships, and c) amount of online engagement or effort involved. For many teens, the social costs of engaging in substance prevention social media campaigns outweigh the benefits. Asking adolescents to participate in substance prevention campaigns delivered through SNSs means also asking teens to violate online peer norms. Given these important findings, prevention specialists should consider alternative approaches to substance prevention, such as social media literacy,

rather than invest resources into activities that offer little return on investment. Social media literacy or teaching teens how to effectively navigate online norms related to substance use is a novel area of prevention research that warrants further investigation.

Keywords: *substance prevention, social networking sites, social media, focus groups, adolescence*

Psychosocial Determinants of Teens' Online Engagement in Substance Prevention

Social Media Campaigns:

Implications for Public Health Organizations

Alcohol and marijuana are the most commonly used illicit substances among adolescents 12-17 years old in the United States (Kann et al., 2016). Half of adolescents experiment with alcohol during their first year of high school and almost three-quarters engage in underage drinking by the time they reach the 12th grade. Slightly more than 1 in 3 adolescents try marijuana and almost half experiment with marijuana by their senior year (Kann et al., 2016). Adolescents' widespread use of alcohol and marijuana is a significant public health concern because teen substance use is associated with numerous negative health outcomes (Azofeifa, Mattson, & Lysterla, 2015; Collins, 2014; Siqueira & Smith, 2015; Epstein et al., 2015).

Media campaigns are one of an array of prevention interventions used to address teen substance use (Hingson & White, 2013). From a prevention standpoint, media campaigns are appealing because they have the ability to reach large audiences with messages that directly or indirectly inform and/or persuade individuals to adopt healthier behaviors (Wakefield et al., 2010). Yet, crafting messages that produce behavior change related to underage drinking and marijuana use has proven difficult (Carpenter & Pechman, 2011; Noar, 2006; Wakefield et al., 2010). Research evaluating the effect of mass media campaigns on adolescents' drug use has yielded mixed and sometimes iatrogenic results despite the billions of federal dollars that have been invested in such efforts over the last two decades (Allara, Ferri, Bo, Gasparini, & Faggiano, 2015). The heterogeneous outcomes produced by traditional substance

prevention media campaigns are not entirely understood but are likely attributed to multiple factors, including difficulty measuring passive acquisition of campaign messages and weak theoretical frameworks, study designs, and evaluation metrics (Allara et al., 2015; Zukin & Snyder, 1984)

Due to existing challenges, public health organizations have begun exploring newer methods for delivering substance prevention media campaigns, including the use of social networking sites (Moorhead et al., 2013). Social networking sites (SNSs) such as Instagram, Snapchat, Facebook and Twitter are defined as web-based platforms that allow users to create public or semi-public personal profiles, establish connections with other online users, and view and assess other users' content (Boyd & Ellison, 2007). Substance prevention campaigns utilizing the features of SNSs are appealing to prevention specialists due to their wide reach. Approximately 92% of teens go online daily and 71% access more than one SNS (Pew Research Center, 2015; Neiger et al., 2012).

Another advantage SNSs offer over traditional media campaigns is two-way communication between campaign marketers and intended audiences. Most substance prevention media campaigns rely on passive media consumption in which teens learn through unidirectional or passive exposure to campaign messages (Wakefield et al., 2010; Zukin et al., 1984). SNSs' bidirectional interface enables teens to become actively involved in the campaign diffusion process by commenting, "liking," following, creating and/or sharing messages resulting in the distribution of highly personalized content at a much lower cost compared to traditional media strategies (Parvanta, Nelson, Parvanta & Harner, 2011, p.2096; Thackeray, Neiger, Hanson, &

McKenzie, 2008).

Substance prevention messages diffused by teens for teens also increase consumer buy-in and message believability (Thackeray et al., 2008). When teens' create substance prevention messages using personal images and/or disseminate pre-existing substance prevention messages on their social networking profile(s), they automatically become a part of the campaign message. In other words, they serve as a message source either intentionally or unintentionally promoting (Winett, 1995) the campaign. As teens mature they often seek advice from their friends and peers on how to act as the desire to fit in becomes of central importance (Brown, 2004). Therefore, having youth serve as a message source is advantageous because credibility within teens' peer network can increase the believability of the message.

As with any health communication campaign, when teens consider engaging in the message diffusion process they must weigh the costs and benefits or evaluate the "price" (Winett, 1995) of changing their behavior. Online engagement in substance prevention campaigns depends on the extent to which teens believe that participating in the message diffusion process will be punished or rewarded. There are many reasons why teens may or may not want to comment on, "like," follow, create and/or share substance prevention messages on SNSs. For example, teens may be hesitant to post substance prevention messages that could lead others to perceive them as "uncool" (Moreno, Briner, Williams, Walker, & Christakis, 2009a). By contrast, adolescents may be amenable to sharing positive health messages that more implicitly suggest they are engaging in drug free activities. To our knowledge, no studies to date have explored how psychosocial determinants influence teens' decisions to participate in

substance prevention campaigns delivered through SNSs. Therefore, the present study used a triangulated mixed methods research design to investigate how to create substance prevention social media campaigns that successfully engage high school youth in the message diffusion process. The aims of this study were built off a conceptual framework that campaign developers have the ability to manipulate three key input variables when developing a substance prevention message: (1) the channel by which the message is delivered; (2) the content contained within the message; and (3) the source responsible for creating and distributing the message (Atkin & Freimuth, 2013). We sought to answer the following three research questions [RQs]:

RQ1: Which channels or types of SNSs would reach the largest network of teens and why?

RQ2: What types of substance prevention messages or content do teens believe would be most effective in reducing underage drinking and marijuana use?

RQ3: What psychosocial factors promote or inhibit teens' willingness to serve as a message source by participating in the message diffusion process as part of a larger substance prevention campaign?

Methods

Sample and Procedures

In 2015, community coalitions in Rhode Island expressed an interest in using SNSs to deliver substance prevention messages to youth 12-17 years old as part of a federally funded grant aimed at reducing underage drinking and marijuana use. Participants in grades nine through twelve were purposively recruited from school-

and community-based youth groups to be part of focus groups within those communities. Inclusion criteria included (1) high school enrollment at the time of the study and (2) English fluency. Focus groups were chosen over in-depth interviews because this study was chiefly interested in understanding group (rather than individual) reactions to substance prevention initiatives (Ulin, Robinson & Tolley, 2005). The university's Institutional Review Board approved this study.

Students were verbally informed about the study two weeks before it was scheduled to take place and provided an assent form and passive consent form to share with their legal caregiver(s). A reminder letter was sent home to legal caregiver(s) one week before the study. On the day of the focus group, teens were assented into the study. A total of thirty-three youth participated in four focus groups. Three focus groups were predominately Hispanic and took place in an urban community setting. Of those groups, one was mixed sex and two were single sex. The fourth focus group was mixed sex containing predominately White youth from a suburban environment.

Participants were invited to serve as key informants due to the sensitive nature of substance use and to protect teens' privacy. Focus group questions were by design phrased to elicit information from teens that reflected the attitudes and behaviors of most "young people their age" as opposed to their personal experiences [Table 1]. Participants were also shown several different examples of substance prevention campaigns to help facilitate discussion on the types of content they believe would be most effective for people their age. The lead investigator and a co-moderator, who was responsible for recording nonverbal cues, facilitated the focus groups. Focus group discussions were followed by a brief self-administered survey that collected

information on participants' demographics and social media behaviors [Table 2]. Focus groups and self-report surveys provided a way to triangulate data collection such that quantitative results from the surveys were used to corroborate qualitative findings from the focus groups (Carter, Bryant-Lukosius, DiCenso, Blythe, J., & Neville, 2014). Participants received a \$10.00 gift card for participation. After completing each focus group, the moderators held a 1-hour, separate debriefing session to discuss salient themes and issues requiring further exploration.

Analysis

Focus groups were digitally recorded and transcribed verbatim. NVivo Version 11.3.2 was used for thematic analyses of focus group transcripts. The lead investigator and a research assistant trained in mixed methods carried out the qualitative analysis (Ulin et al., 2005). A codebook was developed prior to the reading/immersion phase containing a priori codes. The lead investigator and research assistant independently coded the first transcript. Team discussions were held to resolve coding discrepancies. An audit trail was kept related to all analytic decisions. The research assistant coded the remaining three transcripts. After coding, the lead investigator sorted and synthesized the data according to themes and sub-themes central to the study aims. STATA Version 12 was used to conduct descriptive analyses of self-report data.

Results

Consistent with the study aims, emergent themes and sub-themes are discussed according to channel, content, and source.

Channel: SNSs Yielding the Largest Reach

Relevant to RQ1, all participants reported using SNSs. Most participants used

more than one SNS and accessed their online accounts several times a day (approximately 85% and 91%, respectively). Instagram and Snapchat were the most commonly used sites followed by Facebook and Twitter [Table 2]. Thematic analyses revealed that deciding which SNSs to use are based on multiple factors including ease of displaying content, privacy features, and audience. Participants said teens like being able to take pictures or videos of their day that they can post within seconds. In reference to Snapchat, one participant commented, “Because all you have to do is just record the button and it’s 15 seconds long and you post it. That’s it.” Participants said teens also like that posts on Snapchat are temporary (delete within 24 hours). However, participants questioned whether content is ever fully deleted from the Internet and acknowledged having little control over their ability to stop peers from taking screenshots of posts they intended to keep temporary or private. Lastly, participants said teens select SNSs based on who they believe use them. Adolescents gravitate towards platforms primarily used by people their age, including Instagram and Snapchat. Facebook was perceived as more popular among adults. Collectively, teens prefer SNSs that facilitate the greatest degree of autonomy in managing their online identity.

Content: Substance Prevention Messages that Appeal to Teens

In response to RQ2, participants identified several factors that influence the extent to which substance prevention messages appeal to teens, including the length of time it takes to view the content, whether the message elicits a strong emotional response, tone of the message, and ability to relate to the messenger. Participants reported that prevention messages would be competing with an enormous amount of

other online content so messages (if in the form of a video) would need to be short (<40 seconds) and grab their attention. Participants said people their age gravitate towards content that is funny (e.g. memes) and shocking. One participant recalled posting images on his Twitter account from a cigarette ad, “There’s pictures I guess I would retweet sometimes... normal lungs and lungs smoking, and that looks interesting because it’s all nasty.” In the context of substance prevention, participants also preferred content that was based on facts versus scripted/acted out.

Participants’ ability to relate to the person either in the message or responsible for sending the message also appears to increase message effectiveness. Ability to relate to the message source was influenced by the intersection of multiple cultural factors including the sender’s gender, race, class, and affiliation with extracurricular activities (e.g. sports). When the all-male, predominantly Hispanic focus group was shown a substance prevention video containing a White female high school student, one participant commented (with acknowledgment from peers), “If it would have been a guy and a girl in the commercial, then we would have been relating to it more. But it’s just a girl. Why would we just share that with all guys?” When the all-female, predominantly Hispanic focus group was shown a prevention video of a Black male high school athlete, they believed the content would be more relatable to boys, particularly athletes. The intersection of race and class also came up in the all-female group. “What I like was that I feel like most kids could have related to him [Black male athlete] because it seemed like... I don’t know a better way to say it, like, he’s kind of from the hood?” Participants added that substance prevention messages shared by their peers could improve the believability of the message if teens thought the

source's reputation aligned with the content of the message. "You see the person is like a straight arrow person who doesn't do anything bad, you obviously believe them because their character portrays that." Alternatively, participants felt having their peers serve as the message source would not influence believability if the source's reputation were inconsistent with the nature of the message.

Source: Psychosocial factors influencing online engagement

In response to RQ3, participants identified several psychosocial factors that influence teens' decisions to serve as a message source in substance prevention social media campaigns. Intra- and interpersonal issues emerged such as individuals' pre-existing attitudes and behaviors related to substance use, impact on social status and relationships, school climate, and level of online engagement.

Pre-existing attitudes and behaviors related to substance use. When participants were asked if people their age would be willing to create and share substance prevention messages on SNSs, the most common response was "It depends on the person." Participants identified youth already involved in school-based youth programs as more likely to serve as a message source compared to uninvolved youth because involved youth were perceived as having a pre-established interest in substance prevention. Participants also believed peer normalization of and/or the absence of negative experiences with substance use meant teens either did not care or were uninterested in getting involved in the issue altogether. Alternatively, teens believed past negative experiences with underage drinking and marijuana could increase teens' willingness to engage in an online substance prevention campaign if youth intended to or had already confronted issues of substance use. "You don't know

till you lose control... people need to actually go through the whole process of losing control and risking their health to actually feel they need to promote things [substance prevention messages] like this.” Participants believed teens who were unwilling or not ready to face issues of substance use would be the most resistant to serving as a message source.

Impact on social status and relationships. Across all four focus groups, there was a strong consensus that diffusing substance prevention messages on SNSs would violate online social norms, eliciting undesirable feedback from peers:

...on Facebook, everybody else is sharing stuff about smoking or partying, and if you’re like the only person that’s sharing about not doing it, then most likely people will start coming at you because of that. Like, ‘oh, you’re whack.’

Participants reported that posts containing risky behaviors including underage drinking and marijuana use generate the most attention or “likes” from teens and that “doing good” or positive health messages are perceived as boring or “uncool.” Participants believed creating and sharing prevention messages would not generate a lot of attention/“likes” and therefore offered little or no personal gain to their online identity or social status. “The point of posting something is to get likes and make people think that – to agree with you and to think you’re cool.” In addition to concerns about being negatively judged by peers, participants said teens would also be worried about offending friends who engage in underage drinking and marijuana use. “They don’t want to seem like they are disrespecting their friends and telling them they’re bad for doing those types of things.” Though participants saw little or no personal gain in diffusing substance prevention messages on SNSs, they reported teens would be

more willing to serve as a message source if a financial incentive, competition or prize was offered. However, they added that doing so would decrease message believability.

School climate. Participants believed their peers would be more likely to participate in a substance prevention social media campaign by creating “buzz” in the school first. Students thought holding school events could help capture young peoples’ attention and serve as a call-to-action. “If a [community coalition] had an event at school and were like, ‘Add us on Instagram. We’re going to post pictures,’ or whatever, [teens] might do that.” Participants believed creating in-person buzz would only be effective if schools had a positive climate. A positive school climate was seen as one where participants felt teachers and students were personally invested in students’ education. Participants believed schools in higher income neighborhoods, that had a history of holding school-wide activities, would be more effective in engendering student involvement in substance prevention campaigns compared to schools in less affluent areas. In other words, socioeconomic challenges contributing to disparities in school resources were perceived as playing a role in the efficacy of substance prevention efforts.

Level of online engagement. Participants reported a preference for low online engagement or simply acknowledging (Neiger et al, 2012) substance prevention messages (e.g. using the “like” function) over creating and sharing them with individuals in their social networks. Teens’ preference for low online engagement was based on two factors: effort and discretion. “Liking” or following a message is quick and easy. Teens do not need to think about what to put in a message or with whom they would like to share it. Creating and sharing a message involves more time,

cognitive effort, and has greater risk for negative consequences, such as damaging one's reputation or relationships. Participants associated higher levels of engagement with more personal investment in a given issue. "If you like something, that means you agree with that person's opinion or thought. If you share something, that means you think alike, and if you post something yourself, that means you endorse it 100%, good or bad consequences." However, participants also believed higher levels of engagement increases one's vulnerability to peer reprisal.

Discussion

The use of SNSs as a viable channel to communicate substance prevention information to adolescents is a novel and relatively untapped area of research (Yonker, Zan, Scirica, C. V., Jethwani, K., & Kinane, 2015). To extend this area of research, the present study used a triangulated mixed methods design to explore psychosocial factors that influence teens' willingness to engage in social media campaigns aimed at preventing underage drinking and marijuana use. Consistent with previous research (Greene, 2013; Krieger et al., 2013) getting adolescents actively involved in the message diffusion process can improve campaign effectiveness, but only if pre-existing attitudes and behaviors of the message source align with the message content. When this condition holds, messages diffused by teens for teens become particularly effective because findings suggest that online engagement is positively correlated with message endorsement. Specifically, higher online engagement such as creating and sharing messages is associated with stronger message backing than lower engagement like "liking" or following messages which are associated with message acknowledgment (Neiger et al. 2012).

While engaging teens in higher online engagement is advantageous, it is also challenging to achieve because the social costs to teens generally outweigh the benefits. Study findings revealed that the types of messages teens post online are determined by the amount of peer approval and attention (e.g. “likes”) they expect to receive. Generally, participants believed that posting substance prevention messages would not only fail to generate favorable attention, but that doing so would violate online peer norms (Moreno et al, 2009b). Alternatively, findings revealed greater receptivity to a lower engagement approach, which requires less cognitive effort, and lower susceptibility to negative peer feedback. A drawback of having messages originate from substance prevention organizations, however, is that organizations become the primary message source, which could reduce message appeal to teens (Jones et al., 2016).

Another challenge of using SNSs to deliver substance prevention messages is that the content posted to SNSs is constantly refreshing, often only lasting a few seconds or limited to a finite number of characters. In order for substance prevention messages to be competitive, developers must create messages using similar parameters that elicit a visceral response. Study results reflected a consensus that substance prevention messages using humor or factually based fear tactics capture teens’ attention. Findings on the effectiveness of fear tactics have been mixed (Tannenbaum, 2016) so campaign developers considering the use of fear tactics should exercise caution. Nonetheless, these results highlight the importance of novelty. In order for teens to process information, messages must grab their attention first (Greene, 2013).

Even if campaign messages are able to elicit a strong emotional response, teens

may still be reluctant to attend to them. The Transtheoretical Model posits that individuals move through different stages when deciding to change their behavior and that interventions should be tailored according to one's readiness to change (Prochaska & DiClemente, 1983). For example, teens already using drugs with little desire to change may be particularly resistant to any form of online engagement. Despite the vast reach SNSs have to offer, substance prevention social media campaigns are not a one-size-fits-all model.

While a number of challenges exist in facilitating online engagement, findings revealed teens could be incentivized to participate in substance prevention social media campaigns using money, competitions and prizes as rewards. However, using tangible incentives may reduce message believability making it difficult to know whether adolescents' motivations to engage in substance prevention social media campaigns primarily stem from endorsing the campaign message or wanting the reward (Gneezy, Meier & Rey-Biel, 2011). Findings also revealed that creating campaign "buzz" in school first could help improve online engagement, particularly in schools with a positive climate. Therefore, social media campaigns should leverage multiple media channels to increase campaign effectiveness rather than attempt to function as a stand-alone method (Snyder, 2007).

This study has several limitations. First, participants selected into this study had been previously involved in school- and/or community-based substance prevention activities, which may have influenced responses. However, asking participants to share information that reflected the attitudes and behaviors of "most young people their age," rather than personal experiences may have helped to reduce

bias. Second, the lead investigator was involved in the data collection and analyses, which may have influenced interpretation and reporting of study findings. To reduce investigator bias, an independent research assistant coded data and team meetings were conducted to ascertain impartiality. Third, findings may not be generalizable to other adolescents given the small sample size and majority Hispanic participants. Nevertheless, the content generated from this study was robust, providing a critical first step towards understanding the psychosocial factors that affect teens' online engagement in substance prevention social media campaigns.

Implications for Research and Practice

While substance prevention social media campaigns have the potential to reach a vast network of adolescents, study findings revealed that the social costs of online engagement outweigh the benefits for many teens. Results from this study demonstrate that peer norms related to substance use are reinforced online just as they are offline. Asking teens to participate in substance prevention social media campaigns by commenting, "liking," following, creating and/or sharing messages means also asking them to violate online peer norms that could compromise their social well being. Given these challenges, along with several others highlighted in the paragraphs above, it is imperative that prevention specialists consider alternative approaches to substance prevention rather than invest resources into activities that offer little return on investment. For example, promoting skills in social media literacy, or encouraging teens to carefully consider how others' online depictions of substance use may influence their own attitudes and behaviors (and vice versa) through active participation in peer group discussions (Greene, 2013, Litt and Stock, 2011;

Livingstone, 2014), is one such novel area of promise in prevention research that warrants considerable attention (Costello, & Ramo, 2017).

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MANUSCRIPT 2

“Exploring the viability of focus groups as a brief social media literacy intervention
for substance prevention”

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Abstract

Mounting empirical evidence indicates that underage drinking norms exist online just as they do offline prompting serious concern about the influence of social networking sites (SNSs) on alcohol initiation and maintenance among adolescents. Yet, little prevention research exists on how to address this growing public health issue. The purpose of the present study was to use a mixed methods embedded design to examine if focus groups, meant to inform the development of a substance prevention social media campaign, could also serve as a brief social media literacy intervention centered on substance prevention. Participants (n=33) were high school students recruited from school- and community-based youth programs in Rhode Island. Youth were asked to participate in a 1-hour focus group (n=4) and then complete a brief self-administered questionnaire that measured the extent to which they believed they had gained social media literacy skills as a result of participating in the study. Results from one-sample Wilcoxon signed-rank tests indicate that after participating in the focus group discussion(s), participants had a significantly better understanding of how posting pro-drug related content on SNSs may encourage people their age to engage in risk behaviors such as underage drinking ($p < .0001$) and marijuana use ($p < .0001$). Results provide preliminary evidence that using focus groups to promote social media literacy skills is a viable method for addressing online drinking norms and other drug-related content. Implications for future research are discussed.

Keywords: *substance prevention, social networking sites, social media, focus groups, adolescence, media literacy, underage drinking, marijuana use*

Exploring the viability of focus groups as a brief social media literacy intervention for substance prevention

Despite ongoing efforts to prevent and reduce underage drinking in the United States, alcohol remains the most commonly used substance among adolescents, with 1 in 10 (ages 12-17) reporting current use and 6% or 1.4 million binge drinking (Center for Behavioral Health Statistics and Quality, 2016). Over the last decade, social networking sites (SNSs) such as Instagram, Snapchat, and Facebook have become prominent aspects of teens' social environments. Almost 90% of teens use SNSs with approximately 1 in 5 youth going online "almost constantly" or several times a day (Pew Research Center, 2015). Mounting empirical evidence indicates that permissive drinking norms exist online just as they do offline (Loss, Lindacher & Curbach, 2014; Moreno & Whitehill, 2014) predicting more favorable attitudes towards substance use and increased risk for underage drinking (Beullens & Vandebosch, 2016; Geusens & Beullens, 2017; Litt & Stock, 2011; Nesi, Rothenberg, Hussong, Jackson, 2017). The online presence of drinking norms has prompted serious concern about the "influence of social media" on alcohol initiation and maintenance amongst adolescents (Costello & Ramo, 2017; Moreno & Whitehill, 2014). Yet, little prevention research exists on how to address this growing public health issue.

In general, designing an effective intervention first requires a deep understanding of the determinants associated with the phenomenon of interest (Bartholomew, Parcel, Kok, 1998). While it is increasingly evident that a relationship exists between social media and underage drinking, it is important to understand that social media itself does not influence substance use. The perception that social media

influences underage drinking implies that social media is inherently dangerous or “bad” erroneously shifting the focus on the medium rather than the user. In fact, social media is neither bad nor good because it simply serves as a channel for communication (Best, Manktelow & Taylor, 2014). Rather the primary issue is how social media is both used and consumed by teens, and in turn strongly influences adolescents’ decisions about substance use. Just as an automobile can be dangerous to an inexperienced driver, interacting on social media can pose serious health risks if teens are not taught how to become informed consumers, creators, and communicators in the online world (O’Keeffe, Clarke-Pearson, 2011). Consequently, there is a significant public health need to develop substance prevention interventions that teach adolescents how to develop literacy skills specific to their social media use.

The overarching aim of media literacy education (MLE) is to provide individuals with the skills necessary to access, critically evaluate, and exchange an array of content across various media in order to make more informed decisions about issues pertinent to their daily lives (Aufderheide, 1993; Buckingham, 2007; Hobbs, 2010). Gaining momentum in the second half of the 20th century, early MLE centered on the critical analysis of traditional media outlets including print ads, film, television, and radio (Buckingham, 2013; Hobbs & Jensen, 2009). However, due to advances in technology, aims of MLE have expanded to include digital technology or newer, bidirectional methods of communication such as social media (Buckingham, 2007; Hobbs, 2010).

Social media literacy has recently emerged as a distinct sub-discipline of MLE (Livingstone, 2014). Consistent with the core aims of MLE, social media literacy

entails the ability to question various types of content displayed on social media rather than simply accept messages at face value. Due to the interactive nature of SNSs, social media literacy also encompasses the capacity to reflect on one's own online behavior including its impact on the self and others (Livingstone, 2014).

Being able to deconstruct social media text is increasingly complex relative to traditional media because the content displayed on SNSs often originates from individuals directly connected to teens via their social networks. In addition to understanding the social, economic and political forces that drive mass media production delivered through SNSs (Buckingham, 2013), youth must learn how to identify the sociocultural factors that motivate their peers' online behavior (Livingstone, 2014). At the same time, adolescents must also learn how to more carefully consider the types of content they want to share, why, and with whom (Livingstone, 2014). By becoming more self-aware youth are better able to engage as digital citizens, understanding the norms of appropriate and effective online behavior which includes communicating social media texts that respect the rights and privacy of others and promoting civic action around particular social issues (Jones & Mitchell, 2016).

When adolescents do not possess proficient social media literacy skills, they are more apt to rely on automatic cognitive processing mechanisms, forming impressions based on heuristics or mental shortcuts shaped by deeply embedded stereotypes, norms, and conditional assumptions (e.g. "if people my age are posting about alcohol, then they must be using it,") that have been implicitly learned over time (Smith & DeCoster, 2000). While heuristics help save time making judgments and

predictions about the likelihood or frequency of events, mental shortcuts are highly prone to error and can result in misinformation and inaccurate probability estimations (Tversky & Kahneman, 1973). In the context of social media, adolescents who rely on heuristics or assess the frequency of underage drinking simply by how often they see their peers reference alcohol online are prone to overestimate the number of youth who drink (Litt & Stock, 2011).

Accepting pro-alcohol related content at face value rather than questioning the integrity of those messages is problematic among youth because online displays of alcohol may misrepresent the frequency of use, glamorize appeal, or function as a form of overt or covert persuasion (Beullens & Schepers, 2013; Loss, Lindacher & Curbach, 2014). A qualitative study by Moreno, Briner, Williams, Walker, & Christakis (2009a) indicates that adolescents may endorse (e.g. “like”, comment on, follow) and display (e.g. generate and share) images or references to alcohol on social media to look “cool” or gain peer acceptance regardless of whether they are actually engaging in underage drinking. Content analyses reveal that as many as 56% of social media profiles maintained by adolescents contain depictions of actual or perceived alcohol use (Moreno, Parks, Zimmerman, Brito, & Christakis, 2009b; Moreno et al., 2010). When teens are not equipped with the skills necessary to critically evaluate their peers’ positive portrayals of alcohol, inaccurate descriptive norms are formed (Berkowitz, 2004; Cialdini, Kallgren & Reno, 1991). In other words, the extent to which teens believe drinking is normal or common amongst their peers increases.

Social norms theory posits that overestimations of underage drinking increase the likelihood teens will initiate drinking (Berkowitz, 2004). In a randomized

controlled trial (Litt & Stock, 2011), adolescents shown Facebook profiles containing normative displays of alcohol use among older peers reported greater willingness to try drinking compared to youth who viewed profiles that did not contain references to alcohol. Longitudinal studies have also found associations between pro-alcohol related content displayed on social media and underage drinking. For example, Nesi, Rothenburg, Husson and Jackson (2017) found that high school students exposed to alcohol-related content posted by friends were more likely to initiate drinking up to one year later. Moreover, Geusens and Beullens (2017) discovered that teens who shared online references to underage drinking were more susceptible to binge drinking in the months that followed. Notably, findings also revealed that binge drinking predicted online displays of alcohol suggesting a reciprocal, synergistic relationship exists between offline and online behavior (Geusens & Beullens, 2017).

While it is possible to correct adolescents' normative perceptions of underage drinking by providing them with information that reflects actual versus perceived use, the effect sizes of social norms interventions are generally small (Foxcroft, Moreira, Almeida Santimano & Smith, 2015). Social norms interventions rely on passive learning and may also lack credibility if adolescents perceive them as originating from adults (Bangert-Drowns, 1988). Alternatively, media literacy interventions offer more promise because they are designed to promote inquiry-based or active learning where adolescents construct their own conclusions through meaningful dialogue amongst peers (National Association for Media Literacy Education, 2007)

Focus groups, while typically used for collecting data, may be a fitting and convenient method for delivering media literacy interventions. Consistent with the

Core Principles of Media Literacy Education (NAMLE, 2007) focus groups facilitate interactive, reflective learning amongst participants of equal standing. By removing the power dynamic between teacher and pupil, focus groups offer a non-threatening, constructive environment for discussion of sensitive issues (Gatta et al., 2015; Friesem, 2016). For example, a process analysis conducted by Gatta and colleagues (2015) revealed that focus groups meant to inform a larger substance prevention initiative aimed at secondary students also facilitated increased self-awareness, open exchange of opinions, and critical thinking skills on issues relevant to alcohol misuse. Additionally, Friesem (2016) found that the use of focus groups as a media literacy intervention centered on child sexual abuse not only expanded participants' knowledge of the issue but inspired them to think about their own behavior or social responsibility in helping to prevent or reduce the problem.

The purpose of this study was to explore whether focus groups, traditionally used to gather information, can serve as a practical method for delivering substance prevention social media literacy interventions. In particular, a mixed methods embedded design was employed to examine the extent to which focus groups, meant to inform the development of a substance prevention social media campaign, can be used to increase adolescents' understanding of how consuming and promoting substance-related content on social media can influence underage drinking and other risk behaviors.

Methods

Sample and Procedures

In 2015, adolescents in grades nine through twelve were recruited from school- and community-based youth programs involved in the RI Strategic Prevention Framework Partnerships for Success (PFS) project which is a five-year federally funded grant (2013-2018) designed to reduce underage drinking and marijuana use among youth ages 12-17. The university's Institutional Review Board approved study procedures. In order to participate in the study, adolescents needed to be enrolled in high school at the time of data collection and possess English fluency. Adolescents were verbally informed about the study two weeks before it was scheduled to take place and provided an assent form and passive consent form to share with their legal caregiver(s). One week later, a reminder letter and second copy of the passive consent form were sent home to legal caregiver(s). Youth were assented into the study the day of the focus group discussion(s).

A total of thirty-three youth participated in one of four focus groups. Three focus groups were predominantly Hispanic and held in an urban community setting. Of those groups, one was mixed sex and two were single sex (i.e. 1=all boys; 1=all girls). In contrast, the fourth focus group was from a suburban community, mixed sex, and predominantly White. The study's lead investigator facilitated the discussions and a co-moderator took notes and recorded nonverbal cues. Focus groups were followed by a brief self-administered survey that collected participants' social media literacy skills resulting from their study participation as well as information on their social media use, exposure to risky social media content, and demographics. Youth were

given a \$10.00 gift card for their participation. After completing each focus group, the moderators conducted a 1-hour debriefing session to review salient themes. All focus groups were audio-recorded and transcribed verbatim.

Measures

Social media literacy. Using a five-point Likert scale, students were asked to rate how much they agreed with the following five statements: (1) “After participating in today’s discussion, I have a better understanding of how the types of messages other people post on social networking sites may influence my attitudes and behaviors,” (2) “After participating in today’s discussion, I have a better understanding of how the types of messages I post on social networking sites may influence other people’s attitudes and behaviors,” (3) “After participating in today’s discussion, I have a better understanding of how posting messages on social networking sites that display underage drinking may encourage other people my age to engage in underage drinking,” (4) “After participating in today’s discussion, I have a better understanding of how posting message on social networking sites that display marijuana use may encourage other people my age to use marijuana, ” and (5) “Prior to participating in today’s discussion, I hadn’t really thought about how messages posted on social networking sites that display alcohol and marijuana use might encourage people my age to engage in underage drinking and substance use.” The first four questions were used to assess adolescents’ social media literacy skills post the focus group discussion whereas the last question was designed as a retrospective pretest (Lamb, 2005), approximating a baseline measure of social media literacy.

Digital citizenship. Using a five point Likert scale, the extent to which

participants were willing to take an active role in promoting substance prevention on social media was measured using the follow question: “If sometime in the future we asked you to create your own anti-drug message and post or share it on social networking sites like Instagram, Facebook and Twitter as part of a social media campaign aimed at reducing underage drinking and marijuana use, how likely are you to participate in the campaign?”

Social media use. Social media use was measured using two questions. The first question was, “How often to you use social networking sites such as Instagram, Snapchat, Facebook, Twitter, etc.?” Participants could respond with never (I don’t use social media), rarely (1-3 times per month), sometimes (a couple times per week), fairly often (at least once a day), and often (several times a day). The second question asked, “What social networking sites do you currently use?” Teens could select from any or all of the following: Facebook, Friendster, Instagram, Snapchat, Tumblr, Twitter, or other.”

Exposure to pro-substance related content displayed social media.

Adolescents were asked about their exposure to online displays of underage drinking and marijuana using the following two questions: (1) “When you use social networking sites, how often do you see people your age post messages on social media about getting drunk or drinking alcohol?” and (2) “When using social networking sites, how often do you see people your age post messages on social media about marijuana?” Responses for both questions included never, rarely, sometimes, often, and always.

Demographics. A final set of items captured participants' demographic characteristics including age, grade, sex, and race/ethnicity.

Process analysis of focus group discussions. During the focus groups, a series of open-ended questions were posed to address the following topics: (1) adolescents' reasons for using social media (e.g. "Why do so many people your age use social networking sites?") and (2) psychosocial factors that influence the types of content teens display online (e.g. "What types of things do people your age post about online?"). Follow-up questions were used to elicit additional information thereby promoting further critical thinking and reflection (e.g. "Why do you think someone your age would post that type of message?").

Design and Analysis

This study used a mixed methods embedded research design employing quantitative methods to examine study outcomes and qualitative methods to understand the process that produced those outcomes (Creswell & Clark, 2007). Specifically, self-administered post-surveys were used to measure the effectiveness of focus groups as a social media literacy intervention while focus group transcripts were analyzed to identify the active mechanisms that led to an increase in participants' social media literacy skills.

Improving the quality and breadth of the data, a number of additional design elements were implemented to promote more open discussion among youth and reduce disproportionate power relations favoring the focus group moderators. First, because adolescents are often resistant to universal health programs that attempt to teach them about the risks of substance use (Onrust, Otten, Lammers, & Smit, 2016),

participants were deliberately blinded to the nature of the study. Focus groups were designed to serve two purposes: (1) to better understand how and why adolescents use social media in order to develop community-based substance prevention campaigns that successfully engage teens online as part of a larger federally funded grant and (2) to examine whether the focus group discussion(s) increased participants' social media literacy skills as part of the present study. Participants were only informed about the first aim to eliminate any possibility of participants thinking they were being persuaded to think a certain way. Specifically, youth were told, *"You are being asked to be in this study because you represent the age group of young people we are trying to engage and may be able to help us understand some reasons why they may or may not want to participate in social media campaigns related to underage drinking and marijuana use."* Second, rather than asking participants to share their personal experiences on social media, focus group questions were designed to elicit information from teens that reflected the attitudes and behaviors of "most people their age". Framing the questions in this manner was done so that adolescents' would feel more comfortable sharing information given the sensitive nature of substance use and also to protect their privacy in the group setting.

SPSS Version 24 was used to analyze self-report data. One-sample Wilcoxon signed-rank tests were performed to assess the extent to which participants felt they had gained social media literacy skills pertaining to online displays of substance use as a result from participating in the focus group discussion.

NVivo Version 11.3.2 was used to carry out a thematic analysis of the focus group transcripts according to procedures outlined by Ulin, Robinson, & Tolley

(2005). Transcripts were reviewed from multiple “horizontal passes” (Crabtree & Miller, 1999) or analyzed collectively from beginning to end so that the processes by which youth acquired social media literacy skills could be compared across focus groups. Using a primarily inductive approach, codes were developed, sorted, and synthesized according to the study’s aims.

Results

In the sections that follow, findings are organized based on the aims and design of the study. First, quantitative results from the focus group post-surveys are presented indicating the extent to which adolescents’ social media literacy skills improved as a result of participating in the study. Next, qualitative results exploring the learning processes that facilitated adolescents’ acquisition of social media literacy skills are discussed to augment quantitative findings.

Quantitative Results

Table 1 describes the study sample. All participants reported that they use social media with the vast majority (90.91%) going online several times per day. Most participants (84.85%) use more than one social media platform. Among the most popular platforms were Instagram, and Snapchat. Participants reported relatively frequent exposure to peer-generated social media content about getting drunk or drinking alcohol and using marijuana (63.64% and 66.67%, respectively).

Prior to participating in the focus groups, the extent to which participants thought about how online displays of alcohol and marijuana might encourage people their age to engage in substance use was mixed. Almost half of participants (48.5%) indicated that they had not previously considered the effects online exposure to pro-

alcohol and marijuana related content might have on offline substance use compared to about one-third (33.4%) who had and less than one-fifth (18.2%) who were not sure. Results from one-sample Wilcoxon signed-rank tests suggest that after participating in the focus group discussion(s), participants acquired greater social media literacy skills on multiple fronts. First, findings indicated that participants had a significantly better understanding of how posting pro-alcohol related content on SNSs may encourage people their age to engage in underage drinking (median=3) when compared to the reference value (median=2), $T=485.00$, $z=4.85$ $p<.0001$, **Figure 1**. Similarly, participants also had a significantly better understanding of how posting marijuana related content on SNSs may encourage actual use (median=3) when compared to the reference value (median=2), $T=410.50$, $z=4.34$ $p<.0001$, **Figure 2**. More broadly, participants also had a significantly better understanding of how their conduct on social media (i.e. the types of content they display) may influence others' attitudes and behaviors (median=3), $T=549.50$, $z=5.01$ $p<.0001$, **Figure 3**, and alternatively how others' online behavior may influence their own decisions, (median=3), $T=435.00$, $z=4.94$, $p<.0001$ when compared to the reference value (median=2). The majority of participants (66.7%) reported that they would be willing to disseminate their own anti-drug messages as part of a larger social media campaign if recruited by a substance prevention community coalition sometime in the near future.

Qualitative Results

The processes by which adolescents acquired social media literacy skills emerged from a constructive dialogue spanning three content areas (1) understanding

the social contexts that shape adolescents' decisions to display pro-alcohol related content and other risk behaviors on social media (2) critically evaluating the nature of those messages, and (3) exercising autonomy in how one chooses to respond to or deal with peers' online displays of illicit substances. In the sections that follow, each domain is discussed in greater detail.

Understanding social contexts of social media messages

At the start of the focus group(s), participants agreed that most people their age share just about 'anything' on social media. The immediacy and vagueness of their responses demonstrated little awareness of the social contexts that shape adolescents' online activities. However, as conversation(s) evolved, it became clearer to participants that much of what teens display on social media is largely shaped by the social contexts (e.g. peer groups, family, schools, neighborhoods) in which they live.

Across all four focus groups, participants agreed that peer norms play a central role in shaping teens' online behavior. There was a consensus that depictions of and references to risk behaviors such as alcohol use are prevalent on social media because material of that nature generates a lot of attention or "likes" from peers. In turn, participants reasoned that teens' motivations for displaying illicit material stem from desires to look "cool" and "fit in" with their peers. Participants further concluded that many people their age would be reluctant to participate in substance prevention social media campaigns because doing so would violate peer norms. As the dialogue continued among one focus group, other sociocultural influences were raised such as one's school and neighborhood:

It depends on what you surround yourself with basically. Like in [Community A], you mostly see illegal activities and that. You only see some people, only a small percentage get caught doing illegal activity. Most of them are free to do whatever they want. So you see that. You're obviously going to pass a message out to someone else, doing it yourself. But like if you're in [Community B] for example, you just see the kids doing their homework, going to pep rallies, going to school, getting good grades. You're always going to want to fit in to that, so depending on your environment. – *Male high school student, first focus group.*

Compared to more affluent communities comprised of cohesive school systems, growing up in neighborhoods containing high rates of illegal activity was thought to influence teens' online portrayals of alcohol use and other risk behaviors. In other words, participants believed that much of what takes place offline transpires in the online world. Generally, being able to identify and discuss multiple interrelated contextual factors reflected participants' deeper understanding of the complex multifaceted ecological systems (Bronfenbrenner, 1977) that shape young peoples' social media use.

Critically analyzing social media messages

After recognizing that social media content is produced within different social contexts, participants began to critically analyze the illicit material displayed by their peers. Specifically, teens evaluated message validity and considered the potential effects online displays of risk behavior can have on the youth who consume and/or create them.

Assessing message validity. While participants believed some of the pro-substance related content posted by teens reflected real or actual use, they also thought some messages were fake. For example, a female high school student from the second focus group explained that people her age “*post pictures [of alcohol, marijuana and other drugs] because they want to seem like they do that stuff when in reality, they don’t.*” By drawing attention to the notion of impression management, or the deliberate construction and filtering of social media posts to reflect socially desirable behavior (Boyd, 2014), participants were implicitly communicating to each other the importance of questioning the content produced by their peers.

Considering the consequences. When participants were asked whether they thought social media content depicting actual or perceived substance use influenced people their age, responses were mixed. While some participants believed people their age could be ‘tempted’ by illicit content, others thought it made no difference. Participants ultimately concluded that the extent to which social media content affects people their age ‘depends on the person.’ Teens who are not able to think or stand up for them selves were viewed as most susceptible to harmful online influences implicitly reinforcing the importance of being an informed consumer and skilled communicator in the online world. Notably, one male high school student from the first, all boys focus group also brought up the importance of parental involvement. Specifically, he thought youth growing up in homes where parents regularly talk to their children about the dangers of drug use would be less vulnerable to negative online pressures:

It kind of depends on your parents who brought you up and everything they tell you, ‘this is bad, this is bad, this is bad.’ You obviously know it’s [substance use] bad. It doesn’t matter how tempting it is because your parents told you it’s bad.

Asking participants why people their age might *not* post pro-alcohol and other drug related content on social media also motivated youth to consider the consequences of producing and/or endorsing online portrayals of substance use. The most common concern was disappointing or getting in trouble with family. Participants said teens gravitate towards social media platforms mainly used by people their age (e.g. Snapchat) and rely on privacy features as ways to avoid parental reprisal. At the same time, participants also acknowledged that such tactics have not always effectively protected their information from reaching unintended audiences implicitly suggesting youth should carefully consider the types of messages they post online. Other, more distal consequences included getting in trouble with school faculty or law enforcement, being turned down from college admissions, and setting a poor example for younger siblings. Despite these issues, participants from the predominantly Hispanic, all girls focus group commented that when people their age are caught up in the moment, many are not considering the consequences of what they are posting. Nevertheless, there was agreement among focus groups members that posting illicit materials can have serious and lasting effects.

Exercising autonomy in the social media world

By conducting a critical analysis of social media messages, participants began to form their own opinions about how to deal with online references to underage

drinking and other risk behaviors. In particular, youth redefined existing peer norms promoting alcohol and other drugs and exchanged ideas about more effective ways to engage online.

Redefine existing norms. After discussing how many adolescents reference illicit substances on social media to look cool or fit in with peers, disapproving reactions began to emerge across all four focus groups. For example, a female high school student from fourth, mixed sex, predominantly White focus group stated:

I feel like it's just, I don't know, it's just dumb. If you smoke, okay. But to put it out there every Friday, that's not cool. To do it to begin with, it's just dumb but to post it out there every Friday, every day, it gets old. We get that you smoke. We get that you vape. We get it, but you don't have to post it every Friday, every day. We understand. You made it pretty clear like two days ago, and now you're still posting about it. So it just gets annoying.

Rather than conform to existing social pressures, participants began to develop their own opinions about online displays of illicit content. Specifically, participants thought that referencing alcohol and other drugs on social media was unbecoming of people their age. By redefining existing norms, participants were essentially discouraging each other from promoting harmful social media messages.

Modeling effective behavior. Participants also shared ideas about how they could take a more proactive role on social media to help counteract their peers' online portrayals of substance use. For example, several teens said that they would be willing to participate in social media campaigns aimed at reducing underage drinking and other drug use by creating and sharing positive health messages of their own. A female

high school student from the all girls, predominately Hispanic focus group also explained how she planned to use social media to individually benefit other youth:

Me, personally, I would post the good things. Like what I did with [my peer leader] on Saturday. I will post me doing good. Like helping the community, or if I get a certificate in school, I will post that so that people could see good things. And maybe someone would want to follow me, like, you know how there's people that have followed the bad people? I would want people to follow me, like the good things that I do.

Despite peer pressures to display risky content, a male high school participant from the all boys, predominantly Hispanic focus group also described how he refrains from posting illicit material on social media to avoid jeopardizing his chances of getting into college. Collectively, these participants illustrated how social media can be used to both positively influence others and skillfully promote oneself. Moreover, these teens also acted as positive role models for other members of their focus groups(s) by personally endorsing ways to tactically navigate the online world in spite of existing peer norms.

Discussion

To our knowledge, no studies have assessed whether focus groups can be used as a viable method for teaching adolescents skills in social media literacy centered on substance prevention. Consistent with previous studies (Moreno, Parks, Zimmerman, Brito, & Christakis, 2009b; Moreno et al., 2010), findings revealed that adolescents are frequently exposed to online displays of alcohol and other illicit substances, yet only about one-third of teens actually consider how consuming and creating

substance-related content on social media may influence people their age to engage in underage drinking and other drug use. Nevertheless, results also demonstrated that using an approximately 1-hour focus group to engage teens in an inquiry-based dialogue increases teens' ability to more critically think about the types of messages they interact with on social media.

A detailed process analysis revealed that adolescents furthered their media literacy skills according to three domains: (1) understanding how social media messages are created within various social contexts (2) learning how to critically analyze social media content and (3) exercising autonomy in how to navigate the social media world. Specifically, having adolescents participate in a constructive discussion on how to develop effective substance prevention social media campaigns led youth to think about what people their age are willing to share with their peers and why. In doing so, participants began to identify how social media content is shaped by various social influences. There was a widespread consensus that many adolescents reference pro-alcohol and other illicit content on social media to fit in or look "cool" which subsequently prompted participants to critically assess the legitimacy of those types of messages. Participants agreed that not all teens endorsing alcohol and other drug use on social media actually engage in those behaviors. Moreover, some participants commented that regardless of message validity, promoting alcohol-related content and other illicit substances on social media is 'not cool' thereby redefining existing norms to discourage online portrayals of substance use and encourage more positive health messages. Overall, youth agreed that by participating in the focus group(s), they had a better understanding of the reciprocal relationship that exists

between social media use and engagement in risk behaviors including underage drinking and marijuana use. Participants also expressed greater awareness of their roles and responsibilities as digital citizens. Sixty-seven percent reported that they would be willing to participate in a substance prevention social media campaign if recruited by a prevention specialist sometime in the near future.

In general, researchers need to look beyond traditional substance prevention strategies to address drinking norms and other risk behaviors reinforced by adolescents on social media. Compared to generic health education programs, media literacy programs are gaining attention in the field of substance prevention as effective approaches for addressing risk outcomes associated with adolescents' frequent exposure to pro-alcohol related messages (Greene, 2013; Hindmarsh, Jones, & Kervin, 2015). However, the majority of these media literacy programs are dominated by the critical analysis of media messages with little or no focus on media production where adolescents' reflect on the impact of their own media creation and sharing activities. In a study of adolescents' reactions to tobacco ads, Banerjee & Greene (2006) found that media literacy workshops combining content analysis and production were more effective in reducing positive attitudes towards smoking than analysis workshops alone. Furthermore, no existing media literacy programs specifically address the pervasiveness of pro-alcohol and other illicit content consumed and created by teens on social media (Hindmarsh et al., 2015; Greene, 2016). Filling in these two critical research gaps, the present study provided initial evidence that using focus groups designed to engage adolescents in the planning phase of a substance prevention social

media campaign is an innovative and promising way to promote skills in social media literacy.

Focus groups, in many ways, embody principles of Problem-based Learning (PBL), a pedagogical method where individuals work together in small self-directed groups to solve real-world problems (Barrows & Tamblyn, 1980; Savery & Duffy, 1995). The current study was designed to address a real world problem: How can researchers and practitioners develop a substance prevention campaign that would successfully engage adolescents on social media? Self-directed focus groups with teens created collective ownership over the problem. Participants became personally invested in the learning process and needed to use flexible thinking or negotiation in order to generate creative solutions to helping their peers acquire sustainable social media literacy skills pertaining to substance use (Barrows & Tamblyn, 1980; Savery & Duffy, 1995). Moreover, by giving participants a “voice” they were able to examine, test, and refine new ideas, which were then *integrated* into their existing belief systems. For example, qualitative findings revealed that some participants felt strongly that alcohol and other drug-related content displayed on social media influences young people to engage in underage drinking and other risk behaviors while others believed that those types of messages made no such difference. However, through exchanging these opposing ideas, participants ultimately concluded that it “depends on the person” identifying youth who are not able to think for themselves as most susceptible to online influences. According to Kolb (1984) ideas acquired through cognitive integration, as reflected in the example above, are more likely to become highly stable beliefs over time compared to traditional pedagogical methods that focus on trying to

replace old beliefs with new beliefs. Therefore, this study provides preliminary evidence that focus groups are a particularly well-suited method for acquiring sustainable social media literacy skills pertaining to substance use.

Limitations

While the findings from this study are robust, they are not without limitations. First participants selected into this study were high school aged youth. Therefore, results cannot be generalized to younger populations. Second, given the novelty and exploratory nature of the study, results were derived from a non-experimental, post-test only design. Without a baseline measure or comparison group, it is not possible to assess the magnitude of change in participants' acquisition of social media literacy or to rule out extraneous factors. Third, follow-up assessments were not administered so the extent to which participants retained information and subsequently engaged as digital citizens could not be determined. Fourth, the reliability of these results should be interpreted with caution. The use of four focus groups limited the amount of saturation obtained across each of the different content areas. Nevertheless, this study provides valuable information to those interested in developing social media literacy programs targeting underage drinking.

Conclusion and Implications for Future Research

This study contains a number of important implications. First, findings revealed that the majority of adolescents are not thinking about how exposure to alcohol and other drug-related content displayed on SNSs might influence young people to drink or engage in other forms of substance use. Interventions that educate teens about the health risks associated with social media use are urgently needed.

Second, results provide preliminary evidence that using focus groups to promote social media literacy skills is a viable method for addressing online norms pertaining to underage drinking and other drug use. Future studies should assess how this prevention approach compares to other methods such as social norms campaigns. More research is also needed to assess the whether this method can be generalized to younger populations. Middle adolescents in particular may benefit from this approach given middle school is the time when youth begin to cognitively mature in their capacity to distinguish credible media from misleading or persuasive content (Greene, 2013; Livingstone, 2014). Middle school is also when youth begin to experiment with social media as well as substance use (Johnston, O'Malley, Miech, Bachman, & Schulenberg, 2016; Pew Research Center, 2015). By the time youth reach the 8th grade, approximately 10% report recent alcohol use almost 7% report recent marijuana use (Johnston, O'Malley, Miech, Bachman, & Schulenberg, 2016). Consequently, using focus groups to deliver substance prevention social media literacy programs to middle adolescents may serve as an efficacious alternative to traditional substance prevention programs proven to be ineffective among this age group (Onrust, Otten, Lammers, & Smit, 2016). Finally, by using a mixed methods design that entailed a detailed process analysis, this study provides a comprehensive first step towards understanding how to address adolescents' frequent exposure to pro-alcohol related content and other risk behaviors on social media. Additional studies are needed to examine the extent to which focus groups produce sustainable social media literacy skills and digital citizenship in the context of substance prevention.

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Table 1
Selected items from the semi-structured questionnaire delivered to focus groups

Input	Construct	Sample Items
<i>Channel</i>	SNSs yielding the largest reach	Which SNSs do students in your school use most often?
<i>Content</i>	Substance prevention messages that appeal to teens	In the past, organizations have tried using SNSs to educate people your age about things like underage drinking, dating violence, etc. but have not been very successful in reaching people your age. Why do you think that is?
<i>Source</i>	Psychosocial factors influencing online engagement in substance prevention campaigns	If someone your age was asked to develop their own message and then post it on social media, what are some reasons they may or may not want to participate?

Note: The complete version of the semi-structured questionnaire is available upon request to the corresponding author

Table 2
Sample Demographics and Use of Social Networking Sites

Variable	n (%)
Age ^a	
18	4 (12.5)
17	15 (46.9)
16	5 (15.6)
15	5 (15.6)
14	3 (9.4)
Grade	
12th	11 (33.3)
11th	9 (27.3)
10th	8 (24.2)
9th	5 (15.2)
Sex ^b	
Male	8 (24.2)
Female	23 (69.7)
Race/ethnicity	
Hispanic	24 (72.7)
White	6 (18.2)
Other	3 (9.1)
# of SNSs used	
1 site	5 (15.2)
2 sites	7 (21.2)
3 sites	12 (36.4)
4+ sites	9 (27.3)
Type of SNSs uses	
Facebook	20 (60.6)
Instagram	29 (87.9)
Snapchat	28 (84.8)
Tumblr	4 (12.1)
Twitter ^c	19 (57.6)
Use of SNSs	
Several times a day	30 (90.9)
<Several times a day	3 (9.1)

^aOne response missing

^bTwo responses missing

^cSurvey item was revised after the initial focus group resulting in 6 missing responses

Table 1
Demographics and Behavioral Characteristics of High School Students' Social Media Use

	Total sample (n=33)	
	Mean/%	SD
Age (range 14-18) ¹	16.38	1.19
Grade (range 9-12)	10.79	1.08
Sex ²		
Female	69.70	-
Male	24.24	-
Race/ethnicity		
Hispanic	72.73	-
White	18.18	-
Other	9.09	-
Number of social media platforms used		
1 site	15.15	-
2 sites	21.21	-
3 or more sites	63.64	-
Type(s) of social media platforms used		
Facebook	60.61	-
Instagram	87.88	-
Snapchat	84.85	-
Tumbler	12.12	-
Twitter ³	57.58	-
Frequency of social media use		
<Several times a day	9.09	-
Several times a day	90.91	-
Exposure to peer-generated alcohol content ¹		
Never/Rarely	90.09	-
Sometimes	24.24	-
Often/Always	63.64	-
Exposure to peer-generated marijuana content ⁴		
Never/Rarely	6.06	-
Sometimes	18.18	-
Often/Always	66.67	-

¹One response missing

²Two responses missing

³Survey item was revised after the initial focus group resulting in 6 missing responses

⁴Three responses missing

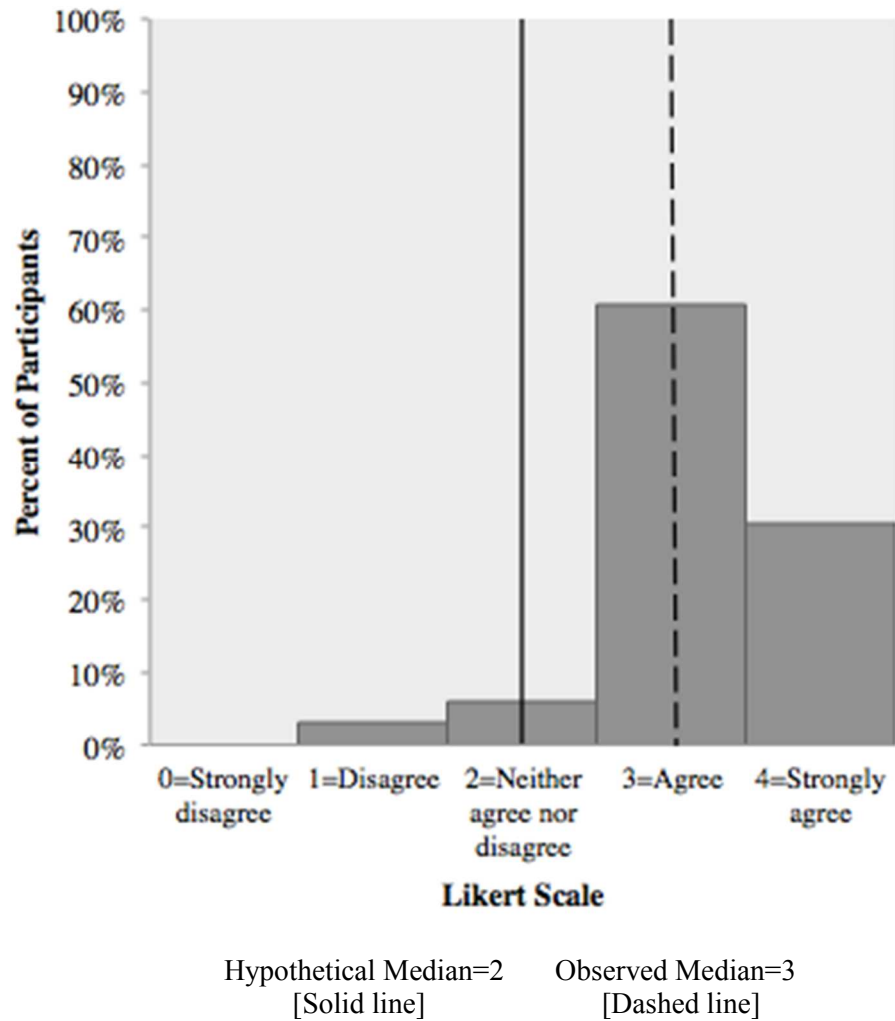


Fig. 1 One-sample Wilcoxon signed-rank test: Understanding how posting messages on SNSs that display pro-alcohol related content may encourage underage drinking

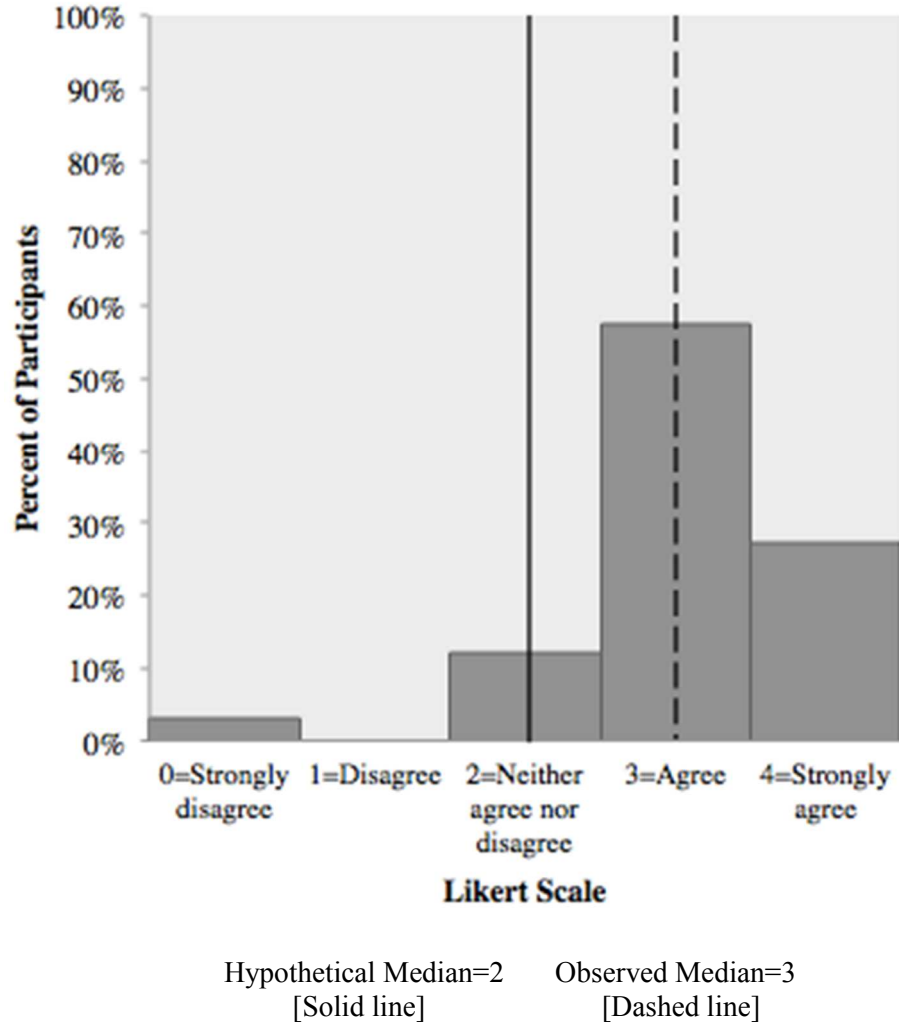


Fig. 2 One-sample Wilcoxon signed-rank test: Understanding how posting messages on SNSs that display pro-marijuana related content may encourage young people to use marijuana

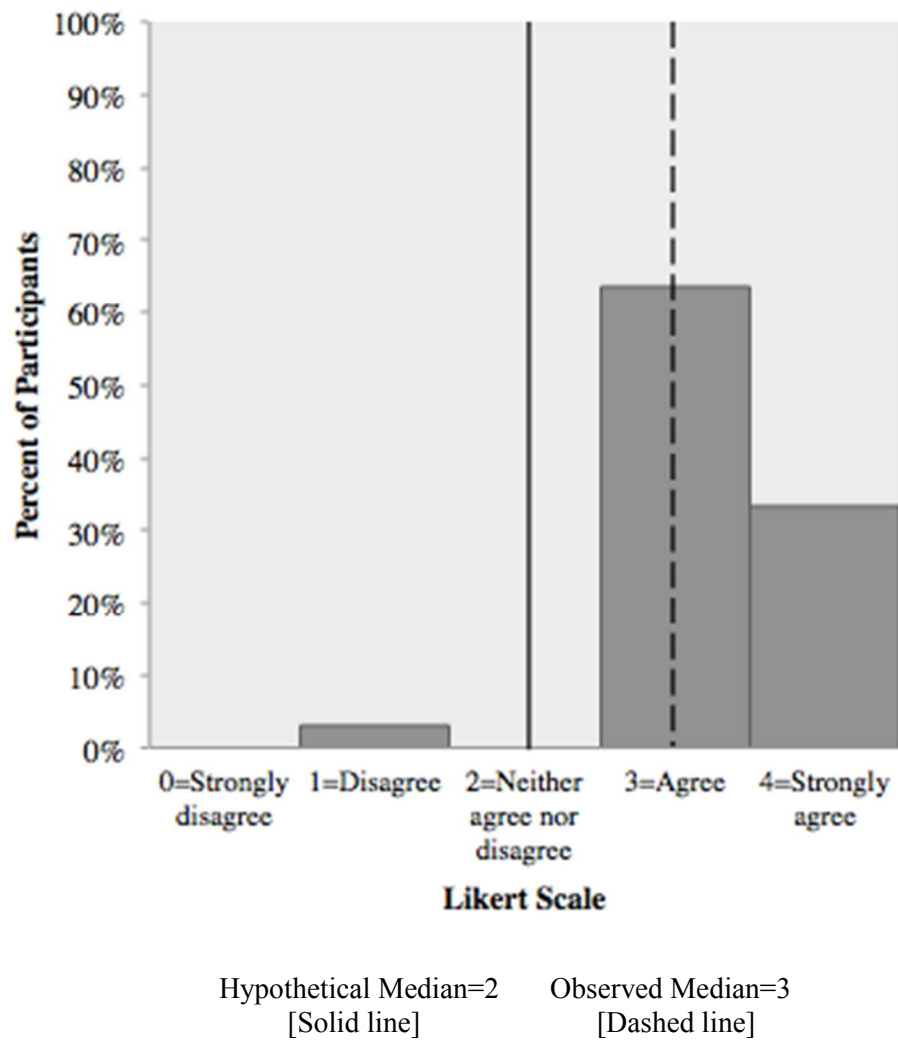


Fig. 3 One-sample Wilcoxon signed-rank test: Understanding how one's own online behavior can influence others' attitudes and behaviors

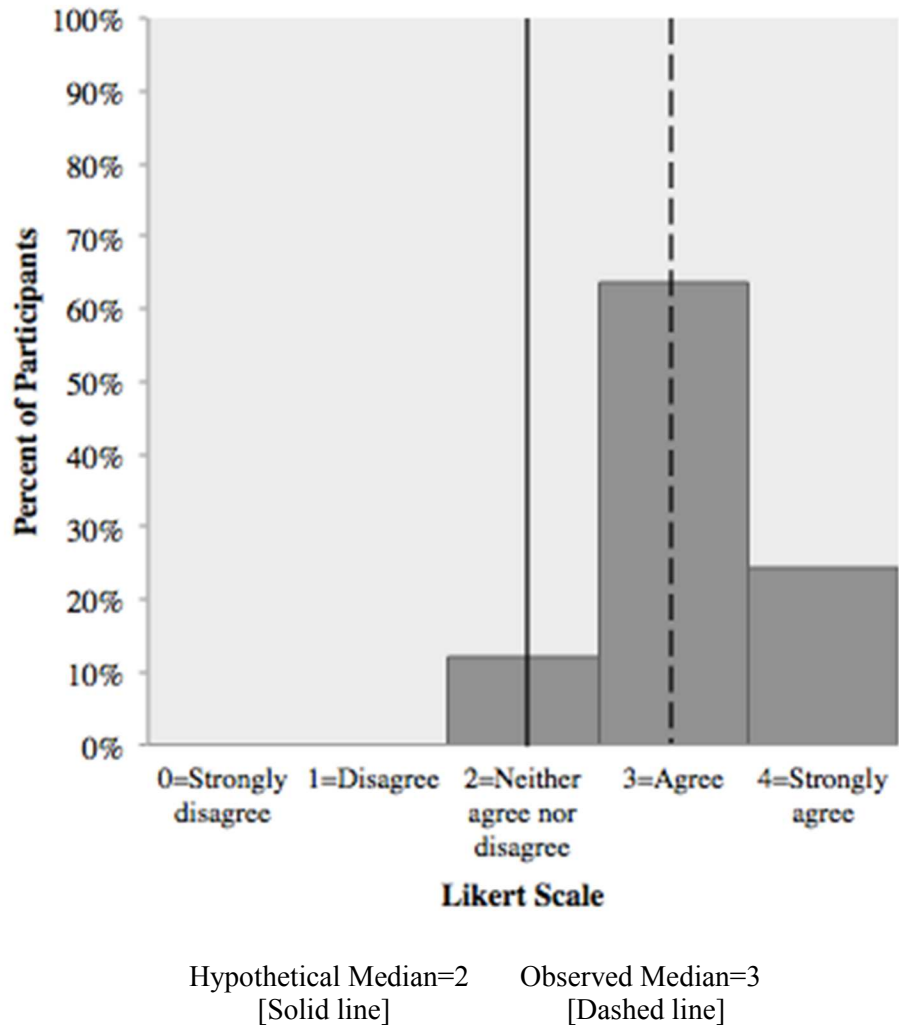


Fig. 4 One-sample Wilcoxon signed-rank test: Understanding how others' online behavior can influence one's personal attitudes and behaviors