Published in final edited form as:

AIDS Educ Prev. 2015 August ; 27(4): 298–311. doi:10.1521/aeap.2015.27.4.298.

EXPLORING SOCIAL NETWORKING TECHNOLOGIES AS TOOLS FOR HIV PREVENTION FOR MEN WHO HAVE SEX WITH MEN

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Abstract

Social networking technologies are influential among men who have sex with men (MSM) and may be an important strategy for HIV prevention. We conducted focus groups with HIV positive and negative participants. Almost all participants used social networking sites to meet new friends and sexual partners. The main obstacle to effective HIV prevention campaigns in social networking platforms was stigmatization based on homosexuality as well as HIV status. Persistent stigma associated with HIV status and disclosure was cited as a top reason for avoiding HIV-related conversations while meeting new partners using social technologies. Further, social networking sites have different social etiquettes and rules that may increase HIV risk by discouraging HIV status disclosure. Overall, successful interventions for MSM using social networking technologies must consider aspects of privacy, stigma, and social norms in order to enact HIV reduction among MSM.

Although men who have sex with men (MSM) make up only about 2% of the U.S. population (Purcell et al., 2012), in 2010 MSM accounted for 78% of new HIV infections among males and 63% of new infections in all populations combined. HIV is reemerging as a serious epidemic among MSM (Beyrer et al., 2012); HIV incidence is decreasing in all

countries and segments of the population except in MSM (Centers for Disease Control and Prevention [CDC], 2012). Gay and bisexual men in the U.S. are 44–86 times more likely to be diagnosed with HIV compared to heterosexual men. More than half of HIV-positive young MSM are unaware of their HIV status (CDC, 2010). Further, only one quarter of the 1.1 million Americans living with HIV have appropriate access to care and a suppressed viral load (CDC, 2012). These data highlight the need to develop effective strategies to improve testing and healthcare utilization among MSM. One possible strategy for interventions among MSM is the use of social networking technologies.

SOCIAL NETWORKING TECHNOLOGIES

Social networking technologies are tools that allow users to create connections communicate, and share interests online (Gunawardena et al., 2009). Social networking technologies encompass all technological tools used for communication within networks including websites, mobile applications, video, and other media. The rapid expansion of smartphones has resulted in increased use of social networking technologies (Chernis & Wurmser, 2012). The MSM population has disproportionately embraced smartphone ownership over the past few years with 91% of gay males versus 63% of heterosexual males currently owning a smartphone device (Community Marketing Insights, 2009, 2013). Likewise, membership to social networking sites has increased more rapidly in lesbian, gay, bisexual, and transgender (LGBT) populations in recent years than in the general public (Community Marketing Insights, 2009, 2013). In 2013, 67% of gay men reported having visited an MSM-themed website/blog, demonstrating an increase of 34% across one year (Community Marketing Insights, 2013). This increased use provides an opportunity for social and behavioral researchers to disseminate health messages and implement interventions to curb behavior change using these new technologies.

Soon after its conception and dissemination, the internet has been a tool used by MSM to find sexual partners (Shaw, 1997) a practice that has continued to increase in popularity and complexity over the years. A survey in 2012 found that 46% of gay men used the Internet to meet new sexual partners (Grov & Crow, 2012) mostly through the use of mobile applications (apps). The most prominent mobile application described in the literature is Grindr. In 2009, this mobile app geared toward MSM introduced the use of geolocation features to communicate with nearby individuals and facilitate finding romantic or sexual partners. Ever since, similar mobile apps targeting sub-segments of the MSM population (e.g., Scruff, Mister, Recon, Adam4Adam Mobile, ManHunt Mobile, Dudes Nude) have also gained popularity among MSM worldwide (Landovitz et al., 2013; Rendina, Jimenez, Grov, Ventuneac, & Parsons, 2014).

SOCIAL NETWORKING PREVENTION TECHNOLOGIES FOR MSM

Earlier studies show that a high percentage of MSM use the internet and SNTs to seek health information (Magee, Bigelow, DeHaan, & Mustanski, 2012; Wilkerson, Smolenski, Horvath, Danilenko, & Rosser, 2010) making SNTs ideal for dissemination of information to this high risk group. SNTs also provide the perfect routes for behavioral interventions because they represent the primary mode of socializing and sexualizing for many young MSM (Harris

Interactive, 2007; Horvath, Rosser, & Remafedi, 2008). Further, interventions using social technologies are advantageous for MSM because they bypass the need for face-to-face interventions, providing privacy, confidentiality, convenience, and reach that can increase the willingness of young MSM to participate in prevention and care services (Magee et al., 2012). Social technologies for HIV prevention represent an emerging phenomenon in critical need of efficient study while platforms are so popular and useful for health interventions among MSM. To date, several interventions have targeted MSM using new social technologies. A systematic review found that technology-based interventions (primarily text message based) for people living with HIV show promise for encouraging medication adherence, sexual risk reduction, decreased drug use, increase health literacy, and improvements in depressive symptoms (Noar & Willoughby, 2012).

Earlier studies have shown that HIV-positive individuals seldom discuss their HIV status with potential partners online prior to engaging in high-risk sexual encounters (Chiu & Young, 2015; Serovich, 2014). The lack of communication of sexual risk is mostly attributed to HIV stigma. Risk reduction interventions delivered via social media technologies have demonstrated low to moderate success in most populations (with effect sizes ranging from low to moderate in general and MSM populations; Gold et al., 2011; Noar & Willoughby, 2012). One randomized controlled trial found that interventions using social networking sites such as Face-book are acceptable and can be both effective in changing behaviors and increasing testing rates among participants (Young, Cumberland, et al., 2013). However, a different randomized trial using Facebook showed that behavioral change was present in the short term but returned to baseline in the long run, similar to the short term effects often found in nontechnology interventions (Bull, Levine, Black, Schmiede, & Santelli, 2012). Other studies looked into the way in which theoretical online interventions should look like to make them more appealing to MSM. They identified high interest in sexual health topics and sexually explicit content (Hooper, Rosser, Horvath, Oakes, & Danilenko, 2008). We need a better understanding of the way in which MSM use social networking technologies in order to customize them to achieve maximum effect within prevention programs. The objectives of this study are to: (1) explore how MSM and their social networks interact using social networking technologies; (2) uncover the perceived barriers to prevention programs using social networking technologies; and (3) explore ways in which a behavioral HIV intervention can be successfully implemented among MSM using social networking technologies.

MATERIALS AND METHODS

A convenience sample was recruited from a small urban area of New England (U.S.) from September 2013 to March 2014 by posting flyers at a health clinic that serves a predominant MSM patient population, local LGBT bars and establishments, and by posting a Facebook event on a MSM dance club's Facebook page. Interested participants contacted staff members for further information about the study and enrollment. Eligibility criteria included: (1) self-identifying as gay, bisexual, or a man who has sex with men, (2) 18 years of age or older, and (3) English-speaking. Further, we stratified our recruitment approach according to HIV status such that half our sample was HIV-positive while half was HIV-negative or unknown status. HIV-positive status was confirmed because all HIV-positive

participants were recruited from a participating HIV clinic. The focus groups were co-led by two members of the research team, one who led the group facilitation and the other who took notes and asked probes when applicable.

INTERVIEW GUIDE

A semistructured interview contained four main themes: (1) participant's social networks, (2) technology practices, (3) HIV knowledge and communication, and (4) prevention as it relates to all three previous categories. The guide consisted of 24 questions (including probes and follow-up questions), with 8 pertaining to social networks, 7 pertaining to technology use, and 9 pertaining to HIV knowledge and communication. Most questions were open ended and meant to encourage open and honest participation by focus group members, and allowed for probe and follow-up questions. All sessions were audio recorded using a digital recorder. The focus groups lasted approximately 90 minutes each. The participants received a \$30 incentive for their participation at the end of the group. Procedures for the focus groups were approved by the university Institutional Review Board.

PARTICIPANTS

For this study, we conducted five focus groups. For one of the focus groups all but one participant cancelled a scheduled appointment, turning that session into an individual interview. This individual was HIV-negative. The other four focus groups, two for HIV-positive MSM and two for HIV-negative MSM, each included 8 to 10 participants for a total of 34 participants. Participants were organized by HIV status in order to provide insight into how HIV status influenced testing and engagement in care. All participants were informed during recruitment of the type of group that they would join (i.e., HIV-positive vs. HIV-negative only), and we develop group rules that stressed privacy and confidentiality to build trust and rapport given the potential sensitivity of disclosing one's status.

DATA ANALYSIS

All transcripts were transcribed by a member of the research team. We used Grounded Theory and the constant comparative method (Stacks & Salwen, 2014; Strauss & Corbin, 1990) as our main analysis frameworks. The entire research team read each focus group transcript and the individual interview to identify main themes and to create a preliminary coding tree. The coding scheme was developed using an inductive approach (Thomas, 2006). We modified the coding tree to add any new relevant themes and codes before transcript coding began. Two research team members independently coded the transcripts using the finalized coding tree and used QSR International's NVIVO 10 qualitative data analysis software.

We established an a priori coder agreement of 90%, and had multiple coders code one transcript to establish coder calibration and agreement. Coding discrepancies were discussed and reconciled between coders. If coding agreement was less than 90% we would retrain and recalibrate coders in an iterative process until 90% or higher agreement was reached. We achieved greater than 90% agreement on all themes (range from 94 to 100%) from the initial coding and therefore did not need to retrain or recalibrate coders. All focus group and the individual interview data were coded and analyzed using matrix coding queries to determine

the most salient themes. Finally, we compared themes between HIV-negative and HIV-positive groups using matrix coding queries to assess whether themes differed between our two main groups.

RESULTS

The demographic characteristics of the participants are displayed in Table 1. Of the 34 participants, almost all were Caucasian. HIV-positive participants ranged in age from 28 to 55 years old, whereas HIV-negative participants ranged in age from 18 to 41 years old. Overall, 44% of our participants were HIV-positive and 56% were HIV-negative.

Several themes emerged in response to our social networking technology questions including: meeting new people, demographic differences in use, social media etiquette, disclosure, privacy concerns, and the use of technology in prevention.

MEETING NEW PEOPLE

Social networking technologies were the main way by which participants met new people and kept in touch with current members of their social networks. In terms of meeting new people, even though the use of certain sites was meant for sexual encounters, many participants revealed how interactions that were initially sexual in nature turned into friendships. “I made a couple of friends through those hook up sites, people I only met with the intention of hooking up with but turned into a friendship” (HIV-positive participant). Another participant from the same group also acknowledged this unintended consequence:

I’ve used it for both purposes: friends and looking for sex ... and the line gets very blurred. Sometimes I just want to chat ... and get into these deep conversations and they will go on for a couple of days and then they’ll tell me ... do you want to f**k? So I kind of just stay away from all that stuff. (HIV-positive participant)

Even though many of the participants showed some contempt towards these platforms, the potential of finding long-lasting friendships through them was often acknowledged.

I have a sort of cyclical or undulating relationship with these gadgets. But the thing is I met some really nice people in the likes of Manhunt and Facebook and some of them turned into great friendships so I think it’s important not to discount them. (HIV-negative participant)

The use of social networking technology for friendships and sex was especially useful for some participants when traveling and in areas with inactive gay scenes and infrastructure: “when we moved here it was a big deal because we didn’t know people and it was like where do you go, because there’s really no bars here ...” (HIV-positive participant).

DEMOGRAPHIC DIFFERENCES IN USE

Another theme that emerged was differences in social networking technology use based on age, location, and HIV status. Younger participants described their use of new social networking technologies and the trends they see regarding older and more established ones like Facebook:

Participant D: Twitter and Tumbler, I'll use ten trillion times more than Facebook

Participant E: I think that the younger generation is using Twitter.

Participant D: Don't you feel like Facebook for our generation is kind of dying?

Participant F: It's totally dying. I think what happened is that Facebook got really popular for about 4 or 5 years, which is generally the lifespan of a social media website

Participant E: [like it happened to] My Space. (HIV-negative participants)

The participants showed great insight into current technology trends and expressed their opinions as to why such rapid change happens:

As a [younger] generation we demand content quickly and rapidly and that's just something that comes with being somebody in a technological age ... I think platforms like Twitter and Instagram are used more where you can get instant information in a way where, Facebook is a little more stalky. Like Facebook you have to do your homework. You have to click around. You have to actively be wanting to see a person. Whereas in Twitter and Instagram [you do not]. (HIV-negative participant)

One of the participants perceived marked differences in the use of social networking technologies based on geography and population size:

In [small city], there are a lot less people on the other apps. Whereas in [large city] there are tons of people on everything. So you can get more specialized ... in New York, my favorite [app] by far is Dudes Nude. I find that the guys on it are just more open minded and more thoughtful ... They tend to be more conscious about a bunch of things. I think that's the site where you would most likely find people who would sleep with HIV-positive guys that they know are positive as long as they're being safe about it. (HIV-negative participant)

Participants also discussed the difference between HIV-positive and negative individuals in relation to social networking technologies. A person's status influenced which specific sites they used because some sites catered more to HIV-positive individuals, incorporated HIV status into profiles, and were more conducive for HIV-positive individuals finding sexual partners:

... there are certain sites where you gravitate towards depending on your status. Like when I was single BBRT [Bareback Real Time Sex] was just starting to become big and there was a positive button you could click for an icon basically everybody has that icon already clicked, or nondisclosure which basically means safe to assume what they are [positive]. (HIV-positive participant)

This participant implied that among the individuals who used this app to engage in bareback sex (i.e., anal sex without the use of condoms), the nondisclosure button was an invitation to assume an HIV positive status. Further, this quote emphasized that some social networking sites are used primarily for social purposes (e.g., Facebook, Instagram), whereas others are used primarily for sexual purposes (e.g., BBRT, Dudes Nude). This distinction between

social and sexual purposes often led participants to discuss issues related to social media etiquette.

SOCIAL MEDIA ETIQUETTE

The idea of media etiquette is a concept that was raised in several groups. This concept describes the ways in which people should behave when using social networking platforms and also how an initial interaction can lead to a transition from one social networking platform to another, which eventually leads to a face-to-face encounter. The way in which people first introduce themselves in social networking technologies was explored in one of the HIV-negative groups:

Everyone does that “oh I’m just looking for friends” and I’m like really? [be]cause you’re a headless torso or you’re shirtless, showing your body and you’re just like “yeah looking for friends” but you won’t respond to everyone, you’ll just respond to attractive men ... so you aren’t just looking for friends you’re looking for attractive men that you are eventually going to f**k so stop saying you’re looking for friends. (HIV-negative participant)

A sexual undertone is commonly assumed when meeting someone in a gay forum or app, even if the person explicitly states he is not looking for a sexual encounter. This creates a problem for participants looking for long term partnerships or friendships:

I remember there would be a lot of people who would reply to me when I said “whoa, what are you looking for” and I would say friends or chatting. They would get pissed, and they would say “you know this is for hooking up?” and “what are you doing out here?” (HIV-negative participant)

The participants describe the process of transitioning from one social technology platform to another in one of the HIV-negative groups: “There’s a hierarchy. Like you’ll start off on Grindr, and then text, and then you get to know them, and then here’s my Facebook...I’d like to learn more about you” (HIV-negative participant). Participants also discussed that what people talked with each other about and how they communicated with each other was influenced by the type of social media platform and that certain types of communication was more appropriate for some platforms than for others.

Participant M: That’s probably like my biggest pet peeve. When someone comes at me really directly and sexually on any kind of social media. It’s like hey here’s a picture of my d**k and I’m like cool. I could have found a much better one online ...

Participant N: Even in text messaging it’s like that. It’s like awful. Oh my G-d get over yourself.

Participant O: That’s why I stopped using Grindr: people start conversations with pictures of their penises.

Participant P: Or guys that have a picture of their abs as their profile picture. (HIV-negative participants)

Most groups agreed that apps and websites which granted a greater degree of anonymity (e.g., Grindr) allowed for people to be more sexual and direct when contacting others. Participants identified a similar direct approach to conversations regarding risk taking behaviors. “I think that conversation escalates a lot quicker as far as ... ‘Hi how are you; What are you looking for? What are you into?’ Then it goes right into condoms or no condoms” (HIV-positive participant).

This also applies to uses of prevention, as one participant summarizes: “... it’s a place for people to meet other people; it’s not a place for you to be an activist about HIV or gay rights ...” (HIV-positive participant). Etiquette and appropriateness of such messages were cited as barriers for possible prevention interventions using social technologies.

DISCLOSURE

The topic of HIV status and disclosure when meeting new potential sex partners was a prevalent theme in both the HIV-positive and negative groups. Some participants expressed frustration when sites asked them for their status in their profile: “that bothers me. In those sites where you have to put your status, I put negative because I don’t want everybody to know because it’s not their business at that point” (HIV-positive participant).

The HIV-positive participants expressed conflict in whether to be forthright by disclosing their status on social networking hook up sites, and the potential consequences of men being uninterested in them: “I mean when this is what you get ... and it was hard, people were uninterested, if you disclosed people would not hook up with you” (HIV-positive participant).

Negative participants expect the status question to be part of the social networking technology platform they are using and tend to readily believe what they read: “I have never asked. If you’re disease free, it will be on their little blurb [in the phone app] ...” (HIV-negative participant). Still, for negative participants the conversation was avoided mainly because it was considered to be something that would turn off a potential sexual partner:

I wouldn’t ask because it’s just awkward. I feel like it would ruin the conversation. If you are trying to just meet someone with the goal of hooking up with them I feel like asking them, being up front with him would be a turn off and they would [look for] other options on Grindr. (HIV-negative participant)

In addition to disclosure of status, some social networking sites encourage the disclosure of one’s viral load.

People in those websites now have the option of saying, instead of positive, undetectable...and that bothers me because I know a lot of people that say they are undetectable and ... they could be ... but I’ve also spent 3 to 4 days with them and the only drugs that I’ve seen them put into their bodies are done recreationally ... (HIV-positive participant)

Several participants stated that this new type of status gives a false sense of security to HIV-positive individuals who in turn transmit this information to potential sexual partners. “I know someone who was going around saying that because he was undetectable, he couldn’t

pass the virus around ... so he wasn't disclosing his status with anyone" (HIV-positive participant). This may represent a strategy to manage potential stigma situations caused from their HIV-positive status.

PRIVACY CONCERNS

Privacy of social media postings was a frequently-cited concern for participants: "say you are head of a company and you're hiring and I've been with people that go to Facebook to check the person out. And when you post something, whether you are (HIV) positive or not, it's ... you know ... I wonder about this person" (HIV-positive participant). This concern for privacy was related to people within their social networks, best expressed in one of the HIV-positive groups:

Earlier in my life ... I was very open and honest, I was OK with having that conversation about my status, but I'm in a relationship with someone who tries to be very anonymous and doesn't want his business out there. So I keep my s**t on lockdown ... I try not to have my Facebook and Twitter ... I mean I won't even do a four square [app] check-in when I'm at the gay and lesbian center because I don't need people knowing why I'm there or asking why. (HIV-positive participant)

The concern for privacy was mentioned by both HIV-negative and HIV-positive participants, but was more prevalent in the HIV-positive groups. HIV-positive participants expressed concerns that posting messages about HIV prevention within social network sites would lead to negative consequences for themselves and their loved ones because of stigma toward HIV and how quickly information can spread within a social network using these platforms.

Participants in both groups often described their social networks as separate or compartmentalized. There was some overlap between their networks, but generally they were kept separate, often along the lines of sexual orientation. For some participants, this compartmentalization was due to perceived lack of empathy, specifically from heterosexual members of different social networks, such as work and/or school. For HIV-positive participants, this compartmentalization also included the fear of discrimination and stigma which influenced what they put out there on social technologies.

I used to have a blog, right after I first got sober and it was just about like trying to date and dealing with my status ... now my partner works in the medical field and ... there are restrictions about going into [medicine] if you're already positive ... so that creates a problem. And he doesn't want his family all over the place knowing that I have a blog. (HIV-positive participant)

This hyper vigilance in social networking technologies regarding sexual orientation and HIV messages is a limiting factor affecting the dissemination of prevention messages within important MSM networks.

USE OF TECHNOLOGY IN PREVENTION

The link between technology use and prevention strategies was carefully explored during the group discussions, and several possible prevention strategies using technology emerged. First, participants stressed that current prevention messaging through popular gay websites

do not have the far-reaching effect they intend. One HIV-negative participant commented on a mass email about HIV testing sent by one of these websites: “I’ll be honest I’ve never read that email and I’m pretty sure that unless you’ve had a recent risky behavior you probably have not looked at those emails. They are easy to delete” (HIV-negative participant). Participants felt similarly towards group messages sent via mobile apps, describing them as poorly orchestrated. Many participants stated that an individualized message within a given social network would be the most effective way to change behaviors within that network. The more personal the message the better:

Texting is more effective than e-mailing. Calling is more effective than texting. The only way that we really get through to people is by talking with them face to face. I think this is generally applicable and that by far the most effective way would be to talk to somebody. (HIV-negative participant)

Participants understood that personal messages had a more profound effect than any behavior campaign out there:

One of my friends just recently became HIV-positive, and he’s a close friend of mine ... and I’m like, oh crap, it can happen to anyone. So that’s when [it] lit a fire under my ass. Be more safe go get tested. It has to hit you at home, because if it doesn’t no one is going to care. These little 17–18 year olds that are going to a club ... they’re not going to care. (HIV-negative participant)

Several other participants related similar ideas, expressing the power of message communication within their social networks as greater influencers in shaping their behaviors. However, many participants showed hesitation to reach out to others directly because of, as previously explored, privacy concerns and social network compartmentalization. For example, this is what a participant said about making his Facebook posts private:

For me personally, I’m too lazy to do that. I’m just going to be blunt. I’d rather go through my phone list and message those [rather] than create a group. That’s my own personal preference. If someone put me in one of those groups and I felt comfortable with everybody in there I would, but when I have different people from various walks of life, family and what not, I wouldn’t feel comfortable doing that piece of my personal life. (HIV-positive participant)

The overlap of social networks and possible breach of privacy through technology appeared daunting for some participants. However, participants suggested that masking prevention messages would allow participants to maintain privacy while still receiving important information. Participants suggested embedding prevention messages in something that would not only be more appealing but also more attractive to the intended audience:

If you were to do something that is masked ... that somehow can [engage others in] the education of different topics, like transmission, and risk activities, and mask it like some kind of survey where like ... “oh your friend took this survey and failed, why don’t you see if you pass it” ... and it can kind of go viral. (HIV-positive participant)

Using this subtle engagement strategy would open the doors for people to more widely share HIV-prevention content within their networks. Participants also mentioned the need for wide broadcasting of the message through multiple types of media. Saturation and variety would increase the likelihood of reaching the target audience and increasing the message's impact on behavior. Participants also felt messages should come from both external sources such as clinicians and prevention experts as well as from within social networks through peer delivered-messages.

DISCUSSION

Consistent with the literature, our results suggest that MSM are frequent users of social networking technologies, using them to maintain current relationships and to meet new people, including for friendships and sex (Grov & Crow, 2012). Use was particularly prevalent and important for young MSM. Young people's preference for newer technologies has been previously described in the literature (Bachmann, Kaufhold, Lewis, & Gil de Zúñiga, 2010; Delli Carpini, 2000) and aligns well with our study that highlighted that younger MSM are early adopters and frequent users of technologies. Several important themes emerged which provided insight into how MSM use social technologies, as well as the best strategies for using social technologies in HIV prevention.

An important theme that came out of discussions with our participants was social compartmentalization, which has been previously observed in the literature (Rosenmann & Safir, 2007). Compartmentalization suggests that certain behavior and conversations over social media depended on the target audience and perceived privacy of the technology. Participants were reluctant to discuss HIV or gay-related themes on social media sites, particularly ones with large groups of heterosexuals (e.g., friends, family, co-workers), for concerns of privacy and fear of potential social consequences for themselves and romantic partners accruing from stigma. This compartmentalization due to issues of privacy may limit the usefulness of mainstream social networking sites for HIV prevention where MSM may not feel comfortable to discuss their sexual orientation or topics that may make people think they have HIV.

Participants expressed discomfort discussing HIV prevention topics using the public functions (e.g., posting) of general social networking sites like Twitter and Facebook, and were more comfortable using technologies that allowed for more intimate and private conversations, such as small online groups of friends, mobile apps with greater privacy settings, or even more preferably one-on-one text or instant messaging. This is consistent with a recent study of young heterosexual men and women that showed that people did not feel comfortable posting HIV and STI prevention messages on relatively public social networking sites like Facebook, and preferred face to face communication of HIV/STI prevention messages or more private technologies like one-on-one texting/messaging (Divecha, Divney, Ickovics, & Kershaw, 2012).

This suggests that a deep concern for privacy is a primary obstacle for any intervention employing social networking technologies. The issue of privacy with online interventions has been raised in several studies, each providing creative solutions or strong precautions to protect privacy while utilizing those technologies (Pachankis, Lelutiu-Weinberger, Golub, &

Parsons, 2013; Pedrana et al., 2013; Young, Cumberland, et al., 2013). Protection of confidentiality was recognized as the single biggest obstacle against prevention efforts within social networking technologies. Without assurances about anonymity, most of our participants expressed great reluctance in transmitting messages related to HIV awareness and prevention. These results suggest the need to create private options within social networking sites or social networking technologies that allow for people to engage in more intimate and sensitive conversations without fear of violations of their confidentiality or privacy. Technologies like Snapchat, Slingshot, and Crumble Messenger, messaging apps that allow one to post messages and pictures with the premise that they will permanently disappear, may be a step in the right direction for providing MSM with more privacy in posting and receiving prevention messages without threat of breaking confidentiality.

In addition to the compartmentalization found in general social networking sites like Facebook and Twitter, we uncovered compartmentalization on gay websites and apps in terms of content and behavior. Many of the gay themed apps like Grindr and Manhunt were perceived by many of the users as primarily sexual. Attempts to develop platonic friendships on these were often perceived as unwelcome or unsuccessful. Further, discussions of prevention on many of the gay-themed apps were often perceived as out of place. Participants were quick to note the poor reception to mass produced messages found in many gay-themed sites. This extended to even disclosure issues. Disclosure of HIV status in social networking platforms is precluded by fear and stigma associated with the disease (Derlega, Winstead, Greene, Serovich, & Elwood, 2004), a theme which also emerged in the present interviews. Participants noted that there are only a few gay apps that allow for HIV status disclosure in online profiles. Mostly, participants avoided the disclosure conversation altogether, which is consistent with studies showing high rates of nondisclosure to new sexual partners by HIV-positive individuals (Parsons et al., 2005). Lack of etiquette of disclosure on social networking sites may facilitate HIV transmission and risk. Increasing social norms around disclosure on social networking sites, particularly ones used for meeting sex partners is an important avenue for future prevention interventions.

A few limitations should be noted from our study. First, our sample was primarily White, and therefore the application of these findings to largely minority MSM populations still needs to be explored. Second, the use of focus groups to discuss sensitive topics such as sexual behavior and HIV may have limited some people to speak up compared to individual interviews, particularly given the concern our participants had about privacy. However, focus groups can also facilitate conversations and add richness that would not be obtained with individual interviews.

CONSIDERATIONS FOR FUTURE INTERVENTIONS

Our results suggest that broad HIV prevention approaches, such as mass texts or the creation of prevention Facebook pages or Twitter accounts, are unlikely to be successful implying that the field needs to devise strategies that allow MSM to maintain network compartmentalization and address concerns for privacy while receiving HIV prevention interventions using social networking technologies. This is consistent with results from trials using social networking sites like Facebook, which have faced problems with retention and

decreased efficacy longitudinally (Bull et al., 2012; Young, Szekeres, & Coates, 2013). Techniques that embed prevention messages in clever ways may be more effective, such as integrating HIV prevention and testing messages in social networking games (Hieftje, Edelman, Camenga, & Fiellin, 2013), quizzes (e.g., Which Game of Thrones character are you?), or larger themes of health and wellness of MSM.

Further, our results suggest that participants are not opposed to engaging their peers and friends about HIV prevention, but prefer to choose the best social media platforms to have these discussions based on who they are communicating with and the nature of the message. This suggests that strategies such as diffusion of innovation, which suggests intervening with key members of social networks who will subsequently spread the messages to relevant members of their social networks, might be an appropriate way to spread HIV prevention messages throughout MSM populations (Rogers, 2010; Stacks & Salwen, 2014). Diffusion of innovation employs early adopters with wide access to a given social network in disseminating messages about HIV testing and prevention, and allows for spread using one-on-one conversations within social network technologies. Focusing on key individuals within networks and providing them training in HIV prevention and how to tailor messaging for different social technologies may be an effective strategy that provides MSM with agency and choice when intervening with members of their own social network.

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TABLE 1

Participant Demographics

	HIV Positive	HIV Negative	Total
Number of Participants, <i>n</i> (%)	15 (44)	19 (56)	34
Age Average <i>M</i> (<i>SD</i>)	36.5 (<i>SD</i> = 8.9)	27.7 (<i>SD</i> = 6.1)	31.2 (<i>SD</i> = 8.4)
Race			
White, <i>n</i> (%)	14 (93)	19 (100)	33 (97)
Latino, <i>n</i> (%)	1 (7)	0 (0)	1 (3)
Recruitment Venue			
Facebook, <i>n</i> (%)	9 (60)	15 (79)	24 (71)
Clinic, <i>n</i> (%)	6 (40)	4 (21)	10 (29)