Facebook group affiliation ties, group topics, and HIV behavioral characteristics among young Black men who have sex with men: Potential for public health intervention

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Introduction

In the United States, HIV incidence is disproportionately concentrated at the intersection of sexual and racial minority communities. Here, young Black men who have sex with men (YBMSM) experience greater burden of HIV incidence than any other subgroup by race/ethnicity, age, and gender (Centers for Disease Control and Prevention, 2017). YBMSM, however, are not monolithic, nor are their social environments. The social contexts in which YBMSM communicate and form relationships are critical in determining the HIV protection and risk they experience. For example, YBMSM members of the Ballroom House and Gay Family communities, clandestine systems of queer kinship in LGBTQ communities of color (Arnold & Bailey, 2009; Bailey, 2009), are more likely than non-members to be accepted in their gender and sexual identities, have greater access to emotional and instrumental social support, and participate in routine testing (Arnold & Bailey, 2009; Kubicek et al., 2013; Young et al., 2017a). Similarly, HIV positive YBMSM with strong connections to the Black community are known to have greater antiretroviral adherence than those on the margins of this community (Behler, Cornell, & Schneider, 2018).

Increasingly, social interactions among YBMSM occur online. Social networking sites (SNS) — i.e., the web-based platforms that enable connection and communication between users — are prominent and mainstream features of young adults’ lives, and YBMSM are no exception to this rule. About 90 percent of young adults use social media of some kind, with Facebook being the most popular irrespective of race (Pew Research Center, 2018). Further, early trends in social media consumption indicated that young LGBTQ adults engaged one another on SNS more frequently than their heterosexual counterparts (Harris, 2008; Taylor, 2013). Together, these trends suggest that SNS are not only relevant social settings for YBMSM but that they also present opportunities for public health engagement (Allison et al., 2012; Holloway et al., 2014a, 2014b; Young et al., 2013).

Much has been written about the potential of SNS and other mobile applications as tools for HIV prevention engagement in this community, however little is known about if or how these interactive environments yield HIV risks and protections for users. Numerous studies document HIV risk and prevention behaviors among MSM users of partner-seeking SNS, such as Grindr (Goedel & Duncan, 2015; Landovitz et al., 2013; Rice et al., 2012; Winetrobe et al., 2014), but a truly relational account of HIV risk and protection in online networks remains undeveloped. A relational account brings explicit attention to patterns of social interaction that expose individuals to exogenous sources of HIV risk and protection, namely in the characteristics and behaviors of their online peers and in the topics they discuss.

To this end, we underscore the intermediary role of Facebook groups in online network structure. Facebook groups are virtual organized communication platforms where users go to communicate in groups, share common interests, and express opinions, all typically around a common cause, interest, activity or identity. As such, the designated topic of a group is a barometer for the subject matter to which a user is exposed.

With this in mind, we explore whether and how group topics bring structure to an HIV risk or preventive network among YBMSM. From a network perspective, we typically imagine HIV risks and protections emerging from the organization of individual behaviors in personal networks. On the other hand, Facebook group memberships represent much broader social networks formed through crowds with shared identity and interest, reflecting YBMSM’s preference for associating with others like themselves (McPherson, Smith-Lovin, & Cook, 2001) in a virtual setting. Thus, Facebook membership may serve as an additional source of influence by virtue of the issues discussed in these settings.
which can reflect or affect individuals’ attitudes about HIV-related behaviors through diffusion of group-specific information. In prior work we examined the privacy level of a Facebook group as a mechanism of group affiliation among YBMSM (Young et al., 2018). We now expand on this approach with our attention to Facebook group topics that are explicitly related to HIV vulnerability and resilience, like sexual identity, sex, and nightlife as well as topics indirectly related like professional development (blinded for review). To this end, we use exponential random graph models (ERGMs) to model the structure of a Facebook group affiliation network among YBMSM by accounting for the dependencies between group affiliation ties and attribute-based covariates like group topics and individual sex behaviors. We anticipate our analysis will reveal local configurations within the Facebook group affiliation network, characterized by particular HIV-related topics and behavioral characteristics, that can be interpreted as constituting online contexts of prevention and risk for network members. Further, identifying group topics that appeal to YBMSM allows us to establish which types of content they naturally seek out and are exposed to on SNS and, consequently, the topics that concerted HIV prevention messaging will have to compete with or leverage to gain traction in these virtual spaces. Of great public health importance is the direct attention to the types of groups that offer the greatest potential for HIV prevention engagement and intervention in this community.

Methods

Data were collected April 2014 to May 2015 as part of a longitudinal cohort study of YBMSM living in Chicago[]. Here we draw on data from Wave 2 of the study when Facebook group affiliations were collected. As described in previous work (blinded for review), participants were recruited using a variant of classic link-tracing called Respondent Driven Sampling (RDS). Widely used in public health studies (Goel & Salganik, 2010), RDS enables valid statistical inference of “hard to reach” populations (e.g., intravenous drug-users, sex workers, men who have sex with men) by providing a design for sampling as well as a method for obtaining parameter estimates of the target population. Referral chains were generated from 62 RDS “seeds”, drawn from a variety of social spaces that YBMSM occupy, including LGBTQ social venues, online networking sites, community-based organizations, and HIV treatment and prevention programs. Candidate participants were eligible to be interviewed if they: 1) self-identified as African American or Black, 2) and prevention programs. Candidate participants were eligible to be spaces that YBMSM occupy, including LGBTQ social venues, online generated from 62 RDS

Sampling procedures resulted in a baseline sample of 618 YBMSM, 525 of which were retained at Wave 2. At each study wave, respondents were asked about demographics, sexual health, health behaviors, and sexual and social networks. Additionally, Facebook data, including Facebook group memberships, were obtained from consenting respondents, using a software application that accessed Facebook’s application programming interface (API). Using the application interface, respondents logged into their primary Facebook account, which enabled the application to retrieve the respondent’s Facebook groups. This method of Facebook data acquisition is now obsolete, as Facebook made changes to its API permissions.

Generating the Facebook group affiliation network

At wave 2, 423 (of 525) respondents self-reported having an active Facebook profile, 301 (71%) of whom consented to the Facebook data collection and belonged to at least one Facebook group. Filtered cases (n = 224) included 99 (44%) individuals who did not have a Facebook profile, 76 (34%) who had a profile but did not consent to Facebook data collection, and 46 (21%) consenters who did not belong to any Facebook groups. Filtered cases did not differ significantly from the analytic sample (n = 301) by HIV testing, PrEP awareness, condomless sex, and group sex. Individuals in the analytic sample were, however, more likely to be HIV positive (OR = 1.75, p < 0.05).

To construct a corresponding Facebook group sample, we began with 4743 unique Facebook groups that were associated with the 301 YBMSM with available group data. Of these groups, approximately 80% (n = 3813) had only one YBMSM study respondent member. Excluding these groups and groups that lacked a description for identifying a primary group topic yielded 657 Facebook groups with 2 or more study respondent members for further consideration.

Because the distribution of YBMSM study respondent members across these 657 groups was characterized by tail extremity relative to a normal distribution, we selected the 90th percentile as a cutoff for inclusion of Facebook groups. This corresponded to groups with 8 or more YBMSM members and yielded a final group sample of 82 groups. Filtering out respondents who had no affiliations with these 82 groups resulted in a final network comprised of 221 YBMSM and 82 Facebook groups.

Characterizing Facebook groups

The topic orientation of a Facebook group is suggestive of the interests of its members and what they discuss and, therefore, has implications for HIV care and sex behavior engagement. As described in greater detail elsewhere (Young, Fujimoto, Alon, Zhang, & Schneider, 2019), we drew on the name of a group and its brief description to identify a primary topic. Topics were derived from a survey of the literature and from an environmental scan of a random sample of Facebook groups in our analytic sample. In total, eight topics were identified and are described in Table 1. Seven of the eight topics are present in our analytic group sample (n = 82), including: LGBTQ Identity, Sexual Attraction, Chat, Nightlife, Personal/Professional Development, Recreational Interests, and Health & Well-being.

| Topic Category                        | Definition                                                                 |
|--------------------------------------|---------------------------------------------------------------------------|
| Sexual Attraction<sup>a</sup>         | Groups that underscore physical/sexual attractiveness and that enable partner ‘cruising’, flirtatious-exchange, sexual networking, and sexual expression |
| Chat<sup>a</sup>                      | Groups that provide a casual forum for posting and conversational exchange among members; posts tend not to be subject specific and content tends to be random (e.g., gossip groups) |
| LGBTQ Identity<sup>a</sup>           | Groups that are about gay pride or gay identity; the focus is on celebrating gay identity and ‘being’ in the LGBTQ community (e.g., LGBTQ advocacy groups); also includes groups dedicated to the Ballroom House community, which are queer surrogate kinship groups that take on the role structure of traditional heteronormative families (e.g., mothers, fathers, children, siblings) and participate in gender expression competitions/performances. |
| Nightlife<sup>a</sup>                 | Groups that promote events — e.g., nightlife/club events, festivals, community events, live shows, etc. |
| Personal/Professional Development<sup>a</sup> | Groups that promote an individual’s image and/or talent for that person’s gain; groups that enable professional networking, promote personal businesses and jobs, money-making opportunities, career advancement etc. |
| Recreational Interests<sup>a</sup>   | Groups about past time interests and hobbies pursued for fun, amusement, or entertainment. Examples include: sports, gaming, dance, poetry, art, reading, listening to music, watching TV etc. |
| Health & Well-being<sup>a</sup>      | Groups that provide information and/or support to members with respect to physical, emotional, and spiritual health and well-being. |
| Community<sup>a</sup>                | Groups about place-based community life (e.g. school alumni groups, neighborhood alumni groups, church groups, groups about living in Chicago, etc.) |

<sup>a</sup> Subject categories present in the group analytic sample (n = 82).
HIV-related characteristics of YBMSM

HIV status. The HIV status of each respondent was determined on the basis of blood testing conducted at time of data collection. In the model we estimate the effects of being HIV positive.

Sex behaviors. Sex behaviors included condomless sex and group sex. Condomless sex was measured on the basis of whether or not a respondent indicated not always using condoms with any named sex partner in the past 9 months, which corresponds to the respondent’s last study visit. Group sex is a self-reported measure of whether or not a respondent engaged in sex with two or more partners at the same time at least once in the past 9 months.

Prevention traits. Prevention characteristics included regular HIV testing and awareness of pre-exposure prophylaxis (PrEP) for HIV prevention. HIV testing frequency was based on how frequently a respondent had been tested since their last study visit. Given CDC testing recommendations for MSM (testing every 3–4 months), regular testers were defined as those who had been tested at least twice since their last visit. PrEP awareness was ascertained by asking respondents, “Before today, have you heard of PrEP?” No other PrEP-related information was presented to respondents at the time of data collection.

Data analysis

Toward understanding how Facebook group topics and HIV-related characteristics bring structure to the Facebook group affiliations among YBMSM, our analysis is driven by the following research questions:

RQ1: Which Facebook group topics are YBMSM more likely to affiliate with?
RQ2: Do individuals cluster around Facebook groups that focus on the same topic?
RQ3: Are YBMSM with particular HIV-related characteristics more likely to belong to Facebook groups?
RQ4: To what extent are affiliations with particular group topics associated with group members’ HIV-related characteristics?

To begin, we conceptualize Facebook group affiliations among YBMSM as a bipartite (or 2-mode) network, comprised of YBMSM (n = 221) and Facebook groups (n = 82) with ties between node sets representing group membership (Wang, 2013). We then apply a class of statistical models for social networks called exponential random graph models (ERGMs) to model network structure (Robins et al., 2005, 2007; Wasserman & Pattison, 1996; Wasserman & Robins, 2005). Traditional statistical methods like regression analysis assume independence in observations; meaning that what one observes about an individual, like their sexual orientation, is assumed to occur independently from what one observes about another’s sexual orientation. That said, network (or relational) data structures, such as a Facebook group affiliation network, violate this assumption because the presence of some ties in the network affects the probability that other ties may be observed (Koskinen et al., 2013). For example, an individual’s decision to join a particular Facebook group may depend on the other types of groups they belong to or the other types of people that belong to a group (Young et al., 2017a,b).

ERGMs, on the other hand, permit inferences about how network ties emerge by estimating the likelihood of a tie being present (or absent) in the network as a function of local tie-based configurations. Each configuration represents a distinct social process, such as reciprocity or balance, and corresponds to a specific parameter in the model (definitions of 2-mode configurations are shown in Table 2S in the supplement to the online version of this paper). Configurations can emerge from connections actors make in response to other ties in the network (e. g., when popular groups continue to attract more YBMSM members) or in response to properties that exist outside the network like YBMSM or group attributes. An estimate of a parameterized configuration that is positive and significant indicates ties are more likely to occur within the configuration than by chance alone. Further details about the specification, estimation, and simulation of ERGMs can be found in (Lusher, Koskinen, & Robins, 2013).

As our objective is to ascertain the relationship between Facebook group affiliation network structure and the attributes of groups and YBMSM, we estimated the effects of four attribute-based parameters to determine whether they were more likely to occur than expected by chance alone. Fig. 1 illustrates and describes the corresponding configurations of these effects.

The ERGM also includes four parameters that represent purely structural (or non-attribute) effects. The endogenous Edge parameter represents the overall propensity for YBMSM to belong to Facebook groups, which corresponds to network density. The Alternating Group K-star parameter represents the tendency for YBMSM to belong to groups that are popular among other YBMSM and, therefore, corresponds to the variance in the distribution of YBMSM affiliates among the Facebook groups. Similarly, the Alternate YBMSM K-Star represents the variability between individuals in terms of the number of groups they belong to. Finally, the Alternate YBMSM two-path represents a form of closure in the network, whereby pairs of Facebook groups tend to share multiple YBMSM members in common. Modeling results were implemented using MPNet, a network estimation program designed for multilevel network data (Wang et al., 2006, 2014).

Results

Characteristics of the 221 YBMSM and 82 Facebook groups are shown in Table 2 relative to characteristics of the larger samples from which each was drawn. Of the 221 YBMSM, 41 percent were HIV positive and majorities were regular testers (61%), were aware of PrEP (78%), and had engaged in condomless sex (62%). About 15 percent reported engaging in group sex. Descriptive results for the analytic sample are consistent with those for the full sample of YBMSM.

Among the 82 Facebook groups, 21 focused on LGBTQ identity (26%), 17 focused on personal/professional development (21%), 14 were chat groups (17%), 12 promoted nightlife (15%), and 10 focused on sexual attraction (12%). The remaining 8 groups (10%) were categorized as “Recreational Interests” (n = 6) or “Health” (n = 2) but were later combined and recategorized as “Other.” Relative to the larger sample of Facebook groups, that had a description and more than one respondent member, LGBTQ identity and nightlife groups are underrepresented in the analytic sample, while sexual attraction and “other” groups are underrepresented. Although results should be interpreted with these differences in mind, the analysis was purposively constructed to represent groups that are salient to enough of the YBMSM in our sample and, therefore, are considered viable points of potential intervention.

Fig. 2 illustrates the 2-mode Facebook group affiliation network with YBMSM study respondents shown as circles and Facebook groups collapsed into 6 group topic meta-nodes shown as squares. Group topic meta-nodes are colored by topic and sized by average degree (i.e., the average number of YBMSM study respondent members among the groups within a topic category). Among the 221 YBMSM and 82 Facebook groups (now collapsed into group topic meta-nodes) there a total of 1268 group affiliation ties, corresponding to a network density of 0.07. YBMSM belong to on average 5.7 Facebook groups and Facebook groups have on average 15.4 YBMSM members. On average, groups that promote personal image/professional development and nightlife events are most popular with 16.7 and 16.0 YBMSM members on average, respectively. Groups that focus on LGBTQ Identity, Chat, and Sexual attraction have on average 12.5, 12.0, and 11.1 YBMSM members, respectively.
The exponential random graph model (ERGM)

Results of the two-mode ERGM are shown in Table 3. Reported in this table are parameter estimates and standard errors. Significance is achieved when the absolute value of the maximum likelihood (ML) estimate is greater than twice the magnitude of the standard error.

2-Mode structural effects

To begin, the ERGM controls for the endogenous effects of three structural (or non-attribute) parameters. The Edge parameter is negative and significant, indicating that YBMSM are less likely than expected by chance to belong to Facebook groups (Estimate $=-8.69$, SE = 2.64), which reinforces what we previously stated about the low density of this group affiliation network. The positive and significant estimate of the Alternating YBMSM K-Star parameter suggests that the network is centralized around a small number of YBMSM who belong to a lot of Facebook groups (Estimate $=1.11$, SE = 0.08). The positive and significant effect of the Alternating two-path term indicates that there is a tendency for some pairs of Facebook groups to share YBMSM members in common (Estimate $=0.09$, SE = 0.01), although the magnitude of this effect is small.

Group attribute-based edge effects (RQ1)

The first set of attribute-based parameters in Table 3 reflect tendencies for individuals, irrespective of their characteristics, to belong to groups with particular topic orientations. Results reveal that YBMSM are less likely than expected to belong to LGBTQ identity (Estimate $=-0.56$, SE = 0.18), sexual attraction (Estimate $=-0.45$, SE = 0.16), and chat groups (Estimate $=-1.07$, SE = 0.30). Conversely, they are more likely to belong to personal/professional development groups (Estimate $=0.33$, SE = 0.15). Individuals were no more or less likely to belong to groups that promote nightlife.

Group attribute-based 4-cycle effects (RQ2)

To capture clustering tendencies around groups that focus on the same topic, we estimate effects of five different group attribute-based 4-cycle terms. Results show that there are positive and significant tendencies for clustering to occur among YBMSM around pairs of Facebook groups that focus on LGBTQ identity (Estimate $=0.37$, SE = 0.11), sexual attraction (Estimate $=0.45$, SE = 0.22), and nightlife (Estimate $=0.58$, SE = 0.23). So, although LGBTQ identity and sexual attraction groups have a smaller than expected chance of being joined by YBMSM, when they are joined, they tend to share multiple YBMSM members in common.

YBMSM attribute-based edge effects (RQ3)

To capture clustering tendencies around groups that focus on the same topic, we estimate effects of five different group attribute-based 4-cycle terms. Results show that there are positive and significant tendencies for clustering to occur among YBMSM around pairs of Facebook groups that focus on LGBTQ identity (Estimate $=0.37$, SE = 0.11), sexual attraction (Estimate $=0.45$, SE = 0.22), and nightlife (Estimate $=0.58$, SE = 0.23). So, although LGBTQ identity and sexual attraction groups have a smaller than expected chance of being joined by YBMSM, when they are joined, they tend to share multiple YBMSM members in common.
Finally, we estimate a series of interaction terms to determine whether particular group topics appeal to YBMSM with particular behavioral characteristics. With five group topics and five behavioral characteristics, 25 possible interactions could have been included in the model. Toward analytic parsimony, we estimated a separate ERGM (see Table 1S in the supplement to the online version of this paper) that included all 25 interaction terms and the main effect terms for each group and YBMSM attribute. Interaction terms that were significant in this precursory model were included in the featured ERGM. Results show that each interaction term we added to the featured model remain significant when adjusting for all other structural and attribute-based parameters. Individuals who engage in condomless sex are more likely than expected to belong to LGBTQ identity groups (Estimate = 0.31, SE = 0.14), individuals who are aware of PrEP are more likely to belong to chat groups (Estimate = 1.03, SE = 0.29), and regular testers are more likely to belong to LGBTQ identity groups (Estimate = 0.54, SE = 0.16) and nightlife groups (Estimate = 0.47, SE = 0.18). Results of the two-mode structural effects and the goodness-of-fit tests are available in the supplement to the online version of this article.

**Discussion**

Relationships between peer groups and HIV risk and prevention are the subject of much research. However, few studies examine how risk and prevention manifest in online peer group settings. In this paper, we adopted a network analytic approach to this question and applied a class of stochastic network models to help us determine how Facebook group topics and HIV prevention and risk behaviors jointly characterize patterns of Facebook group affiliation among YBMSM. Doing so enabled us
to model the observed structure of the Facebook group affiliation network by accounting for both the dependencies among affiliation ties as well as the dependencies between affiliation ties and exogenous covariates like the attributes of Facebook groups and YBMSM (Wang et al., 2013).

We found that YBMSM were less likely to belong to Facebook groups generally assumed to be attractive to young MSM, namely groups that underscore LGBTQ identity and sexual expression, and were more likely to belong to groups that promote personal and professional development. Although it is intuitive to consider groups like LGBTQ identity groups as sources of resilience and affirmation for members, groups that help YBMSM more practically to enhance their professional networks are also an important yet understudied aspect of HIV resilience, especially for marginalized groups like YBMSM (Woodward et al., 2017; O’Leary et al., 2014).

Our findings also reveal significant clustering around pairs of groups sharing the same topic orientation, namely for LGBTQ identity groups, sexual attraction groups, and groups that promote nightlife. And finally, we learned about the associations between certain types of people and certain group topics. Individuals who engaged in condomless sex and who were regular testers were more likely to belong to LGBTQ identity groups, regular testers were also more likely to belong to groups that promote nightlife events, and those who were PrEP aware were more likely to belong to chat forums.

Taken together, there are several features of our study and its findings that have noteworthy implications. First, we feature an examination of online group topics, which are an underexplored mechanism of online social interaction with implications for prevention engagement. Identifying topics that appeal to YBMSM provides a glimpse into their interests and, consequently, what HIV prevention messaging will have to compete against or leverage to capture their attention. Given that talking about HIV is counter-normative for most young adults, interventions should create messaging gateways that leverage the interests of the targeted audience as a means to ease into more sensitive issues.

With respect to these group topics, our analysis identified topic clusters, where network members are brought together via their shared interest in particular group topics. Social clusters signal where social and behavioral norms may emerge due to reinforced communication that occurs when a group of people participate in a common set of groups and conversations. As such, online topic clusters represent key sub-communities that could be targeted for intervention using shared topic interests as messaging gateways. Further, individuals who bridge groups with similar topic orientations could be recruited as peer influencers to spread information from one group to another. In either case, knowledge of group-mediated communities among YBMSM could provide interventionists more tractable and specific populations on which to focus outreach.

Second, knowledge of the specific topics that appeal to prevention oriented YBMSM could be used to identify group environments where it may be more socially acceptable to engage co-members who are less prevention oriented around HIV prevention modalities. For example, our findings show that regular testers and those who engage in condomless sex are both more likely to belong to LGBTQ identity groups. This provides an opportunity to employ these regular testers as peer leaders and to use the shared interest in LGBTQ-related issues as a message catalyst to engage their co-members who engage in condomless sex and other sexual risk behaviors in discussions about the importance of routine testing. This assets-based approach to behavioral change (Morgan & Ziglin, 2007) could also be leveraged to engage YBMSM outside the online group environment. For example, regular testers are also more likely to belong to groups that promote LGBTQ nightlife. As such, these individuals could be recruited and trained to promote prevention opportunities in the club scene.

Finally, although interest in online networks has grown among HIV researchers, research to date has relied primarily on self-reported information about SNS use and online sex partners to draw inferences about the relationship between HIV risk and prevention and online social networking behaviors. This leaves unaddressed the role of network structure in facilitating risk and prevention for network members. Further, we turn our attention to an underexplored online network – a 2-mode network based on Facebook group affiliations. In offline contexts, group-mediated peer interactions have been shown to influence substance use among adolescents (Fujimoto & Valente, 2013) and HIV risk engagement among high-risk populations (Fujimoto et al., 2013, 2015; Young, Fujimoto, & Schneider, 2018). As such it is important that we understand how real that to include their online counterparts.

Limitations

Despite these strengths, there are limitations worth noting. First, the affiliation network includes only groups that had eight or more respondent members. As such, the fact that YBMSM were less likely to belong to sexual attraction and LGBTQ identity groups may reveal more about their hesitation or disinterest in joining groups that attract a certain threshold of other YBMSM in their community than it does about their general interest in either topic. Future work should be directed toward understanding how our results change when the affiliation threshold is relaxed.

Second, the goal of this study was to directly model Facebook group affiliations to identify local configurations in relation to characteristics of YBMSM and Facebook groups. However, we acknowledge that these online relationships may co-evolve with “offline” friendships among YBMSM. Future studies could be extended to verify whether shared interests in particular group topics among YBMSM is a network mechanism in its own right or whether it is a confounder for some other type of ongoing relationship by employing multiplex modeling techniques (Wang et al., 2013).

Third, the fact that an individual belongs to a particular Facebook group is only indicative of their general interest in its subject matter. With no information about an individual’s actual engagement within a group, we are challenged in our ability to determine how important the group setting is to the individual as well as the degree of influence that group members and content could exert on the individual. Having a more accurate sense of which Facebook groups garner the greatest user engagement (e.g., visitations, posts, comments, and reactions) would help identity which groups have the greatest reach and influence potential, both of which are critical attributes of a setting that could be leveraged for HIV prevention engagement.

Finally, we acknowledge that Facebook is not the only relevant SNS platform used by YBMSM. Other platforms like Instagram and Snapchat are rapidly increasing in popularity. However, Facebook remains the most popular social media platform across a wide variety of demographic groups (Greenwood, Perrin, & Duggan, 2016) and is used most frequently by the YBMSM in this cohort. As such, we use Facebook as a case study to inform future explorations of other social networking platforms.

Conclusion

Despite these limitations, our findings provide a structural account of HIV risk and protection as observed in an underexplored, yet culturally salient social context. Given that SNS are now mainstreamed into our daily routines, it behooves the research community to understand their role in fostering both sexual risk and prevention norms in high-risk populations like YBMSM. Developing interventions that leverage the group-based affiliation network structure of YBMSM and, by extension, the topics they discuss in these environments may prove more effective than off-the-shelf interventions that remain agnostic to the needs and interests of this population.
Declaration of competing interest

The authors have nothing to disclose.

Acknowledgments

This study was supported by grants from the National Institute of Child Health and Human Development (K99HD094648), the National Institute of Mental Health (R01MH100021) and used data collected by a social network study funded by the National Institute on Drug Abuse (R01DA033875). We would like to thank student coders Leigh Alon and Liang Zhang for their assistance in coding group topics and our partners at the National Opinion Research Center (NORC) at the University of Chicago for their invaluable support. We also thank study participants for their time and contribution to the study.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ssmph.2019.100510.

Ethics approval

All data collection implicated in this study received ethics approval from the University of Chicago School of Medicine, Biological Sciences Division and from the National Opinion Research Center (NORC) at the University of Chicago.

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