HUMAN COMMUNICATION
& TECHNOLOGY

Exploring Social Identity and Self-Categorization within Niche Networks: The Effect of Group Commitment on Sexual Identity Commitment among Men who have Sex with Men

Michael C. Coker and Jessica A. Kahlow
University of Wisconsin-Milwaukee

Michael Cody Coker ORCID ID: https://orcid.org/0000-0002-0868-4860
Jessica A. Kahlow ORCID ID: https://orcid.org/0000-0002-6174-5351

Abstract

Niche networks for sexual minorities are becoming increasingly popular and have garnered significant scholarly attention. Adding to the ongoing conversation regarding the uses and effects of niche networks, we explore the motivations for and impact of engaging with GPS-based hookup applications on sexual identity and group commitment. Using a cross-sectional survey of a nationwide sample (N = 102) and social identity theory (Tajfel, 1978), we investigate the effect of group commitment and motivations on daily hookup application use and sexual identity commitment among men seeking men. Findings demonstrate that group commitment and sexual identity commitment are positively correlated among GPS-based hookup application users, and that group commitment moderates the relationship between daily application use and sexual identity commitment. Further, the association between group commitment and sexual identity commitment is moderated by users' motivations. Specifically, long-term motivations for using GPS-based hookup applications strengthens the association between group commitment and sexual identity commitment among app users. A significant association existed between group commitment and sexual identity commitment for participants whose primary motivation was long-term, but no association existed for participants whose primary motivation was short-term. This study extends niche network research and social identity theory by situating hookup applications as a social context for experiencing cognitive connections with group members and exploring sexual identity.

Keywords: New media, group commitment, sexual identity, hookup applications, social identity theory

CONTACT Michael Coker, University of Wisconsin-Milwaukee, Merrill Hall, P.O. Box 413, Milwaukee, WI 53201; mccoker@uwm.edu

From crafting a digital advertisement for a roommate to creating a personal profile for an online dating service, the process of creating relationships often relies on online services. For lesbian, gay, bisexual, transgender, and queer (LGBTQ+) individuals, connecting with others to find a partner or sexual mate might especially necessitate digital media due to numerous obstacles of meeting one another face-to-face (e.g., physical safety; Fitzpatrick & Birnholtz, 2018; Grove et al., 2014; Pew Research Center, 2013). Communication technology reduces social barriers, enabling users to connect and create unique social spaces for gratifying their needs and learning from similar others. Importantly, however, we have much to learn about niche networks and queer users (Watson et al., 2017).

Before the internet, learning about queer identity and fulfilling sexual desires often required sexual-minority men, including gay, bisexual, transgender, and queer men, to utilize specific social and physical contexts, such as a bar or bathhouse, to meet other men (Bérubé, 2003). More recently, queer sexual identity exploration, negotiation, and commitment have been linked to new media usage and online community engagement (Gray, 2009; McInroy & Craig, 2017). One example of online communities developed through new media is GPS-based hookup applications.

Men who have sex with men (MSM) commonly use GPS-based social media to practice their sexuality and gratify internal needs (e.g., Grindr, Scruff; Miller, 2015). Hookup app usage has been linked to constructing and managing queer sexuality (Jaspal, 2017), decreasing loneliness, and increasing well-being (Taylor et al., 2017). Although not necessarily "networks" in the true sense (see Rains & Brunner, 2015), GPS-based hookup applications, such as Grindr and Scruff, generate niche networks and online social spaces through which marginalized individuals can engage with a catalog of other users, match (connect), and gratify their motivations for using the media (Fitzpatrick & Birnholtz, 2018). Whereas some motivations for using hookup applications might include long-term relationships or an offline sexual encounter, other motivations include sustaining the interaction online by chatting or sexting or finding individuals with whom a user can use drugs or alcohol. Thus, although niche networks generate virtual social spaces for sexual minorities to connect with and learn from similar users, motivations for downloading hookup applications and communicating with other users might have unique implications for users' social identities and group memberships. As evidenced by earlier hookup application research (Gudelunas, 2012; Taylor et al., 2017; Van de Wiele & Tong, 2014), an individual's motivation for using hookup applications is related to their gratifications and, likely, how they experience their sexual identity and group commitment.

Social identity theory (SIT) argues an individual's identity is partially developed through feeling cognitively connected with a social group by attaching value and emotional significance to that membership (Tajfel, 1978). An individual may be a part of many groups at once—including online and offline—and their self-concept can change based on the context as different identities are privileged depending on the social space. The same shift takes place for queer individuals as they move between various interpersonal contexts (Hajek, 2015), such as visiting a gay bar, meeting a group of friends, and, we argue, chatting with other users on a GPS-based hookup application. Based on the work of Hajek and social identity

theorists (e.g., Turner, 1987), our study argues that as MSM participate in online niche networks, such as Grindr, their sexual identity becomes increasingly salient because of the individuals they are (virtually) around.

The strength of sexual identity among MSM has several noteworthy offline implications, and scholars are increasingly researching identity and new media usage among same-sex-attracted males (e.g., Hajek, 2015). Not only is a stronger sexual identity and community connectedness among MSM related to better wellbeing (Kertzner et al., 2009), but also safer sex practices (Seibt et al., 1995). Extending this line of research, we explore how motivations for and experiences of group commitment through using GPS-based hookup applications relate to users' sexual identity and sexual minority group commitment. Our findings expand existing research on identity formation and management for MSM and contribute to the growing body of research on motivations for niche social media use.

Online Spaces as Informal Learning and Social Environments

The wide adoption of the internet in the 1990s revolutionized the way MSM connected (Bauermeister et al., 2014), which altered the possibilities for MSM in many capacities. Before the internet, a connectivity barrier among members of the LGBTQ+ community directed individuals to shared physical spaces to learn from one another about group norms, create individual identities, and access information and resources. Outside of safe spaces, subtle indicators were sometimes used to connect MSM and indicate sexual preferences and self-categorize into niche groups, such as a handkerchief in a back pocket (Snyder, 1989). The internet changed these norms and called LGBTQ+ individuals from the gay bar to their computer screens; users traded handkerchiefs for clever usernames to suggest sexual preferences. Online spaces have provided content integral to learning about queer sexuality for several decades, thereby acting as informal learning spaces (i.e., virtual affinity spaces; Gee & Hayes, 2012; Roschke, 2014).

Sexual identity exploration has changed dramatically alongside the new media landscape (Craig & McInroy, 2014; Gray, 2009; McInroy & Craig, 2017). Even before social media, individuals engaged with one another through chatrooms, listservs, and email to seek information and form their sexual identity (Hamer, 2003). Even social media user accounts—which showcase other users' pictures, biographical information, and personal details—have been described as more inspirational and helpful to questioning individuals than scripted sexual minority portrayals that are prevalent across offline media (Gray, 2009). The dynamism of online representations is still true today, with more sexual minority men preferring new media to traditional media for the multi-dimensional portrayals of sexual identities (McInroy & Craig, 2017). Virtual connections and social spaces offer more robust and nuanced representations of MSM than traditional media, reshaping how identity salience and group formation are experienced by sexual minorities.

 Since the digital revolution, scholars have spent considerable time exploring the impact of the internet on identity formation in sexual minority men (Grove et al., 2014). In one example, Bond and Figueroa-Caballero (2016) found that adolescents derive greater sexual identity commitment and wellbeing from social media usage than other forms of interpersonal media, such as text messages, chatroom

exchanges, or email. Relatedly, self-disclosure on Grindr has been related to decreased loneliness and stigma associated with a sexual minority identity (Taylor et al., 2017), which suggests that communicating with similar others through hookup applications could shape how users see themselves. Other research corroborates such results, suggesting new media allow users to access resources, explore identity, and find community (Craig & McInroy, 2014). Even after exploring, establishing, or accepting their sexual identity, sexual minority youth use new media for sensemaking, gaining information, and soliciting support from others (Gray, 2009).

Taken as a whole, sexual minority men occupy curated spaces on social media for exploring elements of queer sexuality from dynamic social actors (i.e., technology users), adopting communities for social and informational support, and committing to their own sexual identities. Feeling cognitively connected with dynamic sexual minority groups may be the theoretical lynchpin among new media use, enhanced sexual identity exploration and commitment, and the increased well-being users experience (see Bond & Figueroa-Caballero, 2016; Craig & McInroy, 2014).

Virtual Group and Identity Commitment

Social identity theory argues that an individual has several possible selves, including individual identities and group memberships (Tajfel & Turner, 1979). An individual's identity is partly developed through feeling cognitively connected with a social group by attaching value and emotional significance to that membership (Tajfel, 1978). Individuals are commonly involved with many groups at once and their self-concept can change based on the context; as individuals engage with different groups or social spaces their salient identity shifts (Turner, 1987). For example, older gay men have described feeling gayer and more connected to their queer sexuality when they were among a group of younger gay men (Hajek, 2015). On the other hand, participating in conversations with men their age made older gay men feel out of touch with their gay identity due to the overarching concept of what it means to be a gay man (i.e., associating gayness with youth). Modeling after Hajek (2015) and SIT, it follows that engaging in group interactions across niche networks specifically designed for MSM (e.g., Grindr, Scruff) might shape the salience of a queer sexual identity based on the understanding of the overarching group concept (e.g., shared identity, common objectives; Tajfel & Turner, 1979).

Whereas group commitment describes the process of feeling cognitively connected with others because of shared identities, an attraction between members, and emotional involvement with a common group definition (McKenna & Bargh, 1998; Tajfel & Turner, 1979), sexual identity commitment is an individual's self-concept of their sexual self. Similar to a sexual identity, Tajfel and Turner (1979) describe a social identity as the "aspects of an individual's self-image that derive from the social categories to which he perceives himself belonging" (p. 40). Thus, sexual identity and group membership are separate processes that are interrelated. As app users engage with similar others in virtual social spaces, their social identity relevant to the group likely becomes more salient. Thus, to some extent, sexual identity formation and group commitment should be associated

with exposure to sexual minorities within virtual spaces. As such, we predict the following hypothesis:

H1: Sexual identity commitment and group commitment will be positively correlated among MSM using GPS-based hookup applications.

Online groups have been characterized as territories in which individuals can form relationships and learn from others based on shared interests, similarities, and attraction between group members (McKenna & Bargh, 1998). Like passionate affinity spaces (Gee & Hayes, 2012), niche networks (e.g., hookup apps for MSM) might act as informal learning environments in which users tacitly or explicitly gain knowledge about their identity from other users (Gee & Hayes, 2012). As individuals adopt certain media and particular channels to satiate their passions or to gratify their needs, they learn about their identity as it relates to group norms and characteristics (Gee & Hayes, 2012; Roschke, 2014).

Hookup applications might provide opportunities for ingroup identification through dyadic communication with another user, which is related to positive social and psychological wellbeing (Chong et al., 2015; Kertzner et al., 2009). Further, hookup applications enable users experiencing cognitive closeness with similar others, which can reduce stigma associated with a sexual identity (Taylor et al., 2017) and shape self-identity (Bargh & McKenna, 2004; Bargh et al., 2002; McKenna & Bargh, 1998). However, the relationship between hookup app use and group commitment is less clear.

LGB-tailored social networking sites, in general, can provide informational and emotional exchanges with group members and have been positively correlated with group membership (Chong et al., 2015). However, whereas many GPS-based hookup application users hope hookups will turn into romantic relationships (Miller, 2015; Watson et al., 2017), connections formed on GPS-based hookup applications for MSM tend to facilitate task-based communication and brief sexual encounters (Gudelunas, 2012; Macapagal et al., 2018) which might not trigger a categorization response. As such, it is unclear how GPS-based hookup application will be related to group commitment. To this end, we explore the relationship among communicating with another perceived MSM user through hookup applications for MSM (app use), how a user feels about their identity (sexual identity commitment), and how a user feels about sexual minority groups (group commitment).

Building on SIT, self-categorization theory (SCT; Turner, 1987) posits individuals categorize and label themselves—and likely commit to the relevant group—as they search for the meaning of their experiences. On the one hand, simply having sex or communicating with another man on a hookup app might not trigger a strong enough social categorization with sexual minority men to cause a MSM to perceive himself as a part of a sexual minority group, as explained in SCT. On the other hand, an individual who does identify as a MSM might experience positive sexual identity commitment as a sexual minority because he is committed as a group member of GPS-based hookup applications, as predicted in social identity theory. Although the literature suggests a mediating relationship, where hookup application daily use should influence sexual identity commitment through group

commitment, it could also be the case that group commitment influences the relationship between hookup application daily use and sexual identity commitment, which would suggest a moderating relationship. This leads us to the following research question:

> RQ1: Does group commitment mediate or moderate the relationship between daily application use and sexual identity commitment?

Motivations for Using Niche Networks

Given the varied uses of GPS-based hookup applications and potential differences in the associations between application use and group membership, it is also important to understand the role motivations play in shaping group and sexual identity commitment. Motivations for downloading hookup applications and engaging with other users vary (Gudelunas, 2012). Users rely on different applications (e.g., Grindr, Growlr, Scruff) to gratify various sexual desires (Miller, 2015; Miller & Behm-Morawitz, 2016). In response to a substantial portion of hookup application literature focusing on outcomes, Miller (2015) called scholars to consider how motivations for using hookup applications for MSM and the potential sense of community built across MSM applications interact with users and their identities. Responding to Miller's (2015) call and adding to a relatively young research trajectory, we sought to understand how users' motivations for using hookup applications relate to their identity and perceived memberships.

Relationships, sexting, hookups, and safety are only just a few of the motivations for using hookup applications, many of which are enabled through anonymity (Gudelunas, 2012). Others include social inclusion, friendship, entertainment (Van De Wiele & Tong, 2014), as well as connecting with others to find drugs and/or alcohol (Rice et al., 2012). Albeit many connections made through GPS-based hookup applications are maintained strictly online (Miller, 2015), the length and duration of interactions vary; whereas some interactions might not make it past the browsing or matching phase, other motivations for using MSM hookup applications, such as finding friends, are linked to more self-disclosure (Van De Wiele & Tong, 2014) and likely more sustained interactions. From a group and collective identity perspective, sustained exposure and prolonged communication with other users should increase identity salience (Tajfel & Turner, 1979) and, perhaps, sexual identity commitment in comparison to ephemeral interactions. Further, goals that motivate users to act on new media have been found to interact with their self-identity and group memberships (Bargh & McKenna, 2004). It follows that motivations for using GPS-based hookup applications are correlated with sexual identity commitment and group commitment.

Following scholars exploring motivations for using GPS-based hookup applications (Gudelunas, 2012; Miller, 2015; Rice et al., 2012), we propose one high-level way of categorizing and making sense of the various motivations for using GPS-based hookup applications is as motivations relate to potential sustained relational contact. To this end, we explore motivations in two discrete categories: long-term and short-term motivations. Specifically, to explore these relationships and add nuance to the dialogue on motivations for using GPS-based hookup applications, we collapsed previously identified motives into two categories and coded them

as such: 1) long-term motivations (i.e., to connect with the community, to make new friends, or to find someone to date) or 2) short-term motivations (i.e., to meet people to have sex/hook up with, connecting with others for drugs and/or alcohol). Long-term motivations reflect an individual's deeper desires to have lasting connections and relationships, while short-term motivations reflect immediate personal needs and desires. These differences in relational goals for using media should interact with perceived identity and group membership (Bargh & McKenna, 2004) and social encounters are likely at the praxis of group identification and one's social identity (Tajfel, 1978; Tajfel & Turner, 1979). Therefore, the deeper connections associated with long-term motivations for using GPS-based hookup applications should increase feeling cognitively connected with LGBTQ+ groups. Thus, our final hypothesis predicts:

> H2: The association between group commitment and sexual identity commitment will be stronger depending on users' motivations.

Method

Participants and Procedures

Participants were recruited through a convenience and snowball sample by sharing the survey link with members of the first author's social networks. All participants were 18 years or older and self-identified as a user of one or more GPS-based hookup applications for MSM. After initial participants completed the survey, they were invited to share a link with other members within their social circle who also qualified for this study. The snowball participants ($n = 30$) were gathered in March 2019. Additional participants were recruited via Amazon Mechanical Turk ($n = 72$) in March 2020 and received $0.30 for participating. Participants were only included if they successfully passed the two comprehension checks in the survey.

Participants included 102 men who have sex with men. Participants were between ages 18–61 ($m = 30.04$, $SD = 9.99$) and of primarily White/Caucasian descent ($n = 52$). Other ethnicities represented included the following: Asian ($n = 16$), African American ($n = 12$), Hispanic ($n = 11$), Native American ($n = 6$), and Biracial ($n = 3$). Most participants were from urban areas ($n = 60$), followed by suburban ($n = 21$) and rural ($n = 19$) areas. Most participants were from the South ($n = 35$), followed by the Northeast ($n = 17$), West ($n = 10$), and Midwest ($n = 8$). Users reported favorite applications being Grindr ($n = 63$), Tinder ($n = 38$), Scruff ($n = 25$), Growlr ($n = 8$), Hornet ($n = 7$), Bumble ($n = 6$), OkCupid ($n = 6$), Jack'd ($n = 5$), Facebook ($n = 5$), Clover ($n = 2$), and Adam4Adam ($n = 2$) (users were able to write in more than one favorite application).

Measures

The present study is a subset of data from a larger study that includes multiple measures. This manuscript only represents the data that is relevant to the present study. Survey measures included demographic information, platform use and motivations, sexting frequency, group commitment, and sexual identity commitment.

Platform motivations. Rice et al.'s (2012) scale on motivations for using Grindr was adapted to determine the primary reason the participant used GPS-based hookup applications, in general. Participants were asked to identify their primary motivation using hookup applications. Options included the following: "to make new friends," "to meet people to have sex/hook up with," "to find someone to date," "to 'kill time," "to connect with the gay community," and "to find people to drink/use drugs with." In accordance with H2, we further categorized motivations based on time and sustained contact likely associated with each goal. Long-term motivations included connecting with the community, making new friends, and finding someone to date, while short-term motivations included meeting people to have sex/hook up with and connecting with others for drugs and/or alcohol.

Group commitment. Lehmiller and Konkel's (2013) modified investment model scale (Rusbult, et al., 1998) was used to measure satisfaction, investment, alternatives, and commitment to the sexual minority community. Each subscale consisted of three-item, nine-point scales from (1) do not agree at all to (9) agree completely. The scale demonstrated strong reliability (α = .93).

Sexual identity commitment. Mohr and Kendra's (2011) lesbian, gay, and bisexual identity scale (LGBIS) was used to measure overall identity commitment. The 27-item, nine-point scale consists of eight subscales, which include assessing acceptance concerns, concealment motivation, identity uncertainty, internalized homonegativity, difficulty with the identity development process, identity superiority, identity affirmation, and identity centrality. The scale demonstrated strong reliability (α = .95).

Daily use. Overall GPS-based hookup application daily use was measured by asking respondents the amount of time users spent on GPS-based hookup applications on an average day on a 5-point scale, with (1) rarely and (5) often. Correlations among study variables are reported in Table 1.

Table 1. *Correlations*

	2	3	4	5	6	7	8	9
1. Age	0.20	0.05	0.08	-0.20	-0.10	0.05	0.01	0.06
2. Gender		0.04	-0.13	-0.02	0	.23*	0.11	0.11
3. Ethnicity			-.20*	0.04	0.04	-0.02	-0.09	-0.15
4. Area				0.11	-.24*	-.22*	-0.17	0.06
5. Relationship Status					0.14	-0.10	-0.19	-0.01
6. Frequency of Use						.56**	0.09	0.01
7. Daily Use							0.18	-0.01
8. Sexual Identity Commitment								.29**

9. Group Commitment
* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Analysis

The correlation matrix shows that group commitment and sexual identity commitment are positively correlated ($r = .29$). Since group commitment is associated with increases with sexual identity commitment, H1 is supported.

Our research question was tested using a simple mediation and a simple moderation model. We first used the Hayes' PROCESS extension for SPSS with Model 4 (Hayes, 2018) to test our inquiry into a potential mediated relationship. The model used sexual identity commitment as the outcome variable (Y), daily use as the predictor variable (X), and group commitment as the mediating variable (M). However, there was no evidence of an indirect effect on sexual identity commitment using a bootstrap confidence interval based on 5,000 bootstrap samples that crossed zero (-.09 to .08). Results of the mediation are reported in Table 2.

Table 2. *Model coefficients for mediation model*

Predictor		Group commitment (*M*)				Outcome Sexual identity commitment (*Y*)		
		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
Daily use (*X*)	*a*	-.07	.21	.00	*c'*	.16	.15	.29
Group commitment (*M*)	-				*b*	.23	.08	.01
Constant	i_M	5.68	1.27	.72	i_Y	4.26	1.00	.00
			$R = .26$				$R = .41$	
			F 6, 75) = .89, $p > .05$				F (7, 74) = 2.18, $p > .05$	

The results of the correlations indicate some relationship between app use, group commitment, and sexual identity commitment. The mediation would have indicated that daily use indirectly influences sexual identity commitment through group commitment. A moderation analysis is similar, but it would say whether group commitment strengthens or weakens the relationship between daily use and sexual identity commitment. To fully answer RQ1, we then tested a moderation model.

Hayes' (2018) PROCESS Model 1 was used to test the moderation effect of group commitment on daily use and sexual identity commitment using age, ethnicity, and area as covariates. The model is presented in Figure 1. Variables were mean centered to aid in the interpretation of the results. The relationship between daily hookup app use and sexual identity commitment was moderated by group commitment, F (3, 88) = 6.55, $R = .47$, $p < .01$. The significant interaction ($\beta = .23$, $p = .05$) indicates the presence of the moderation effect. These variables accounted for a significant amount of the variance in sexual identity commitment, $\Delta R^2 = .07$, ΔF (1, 88) = 7.47, $p = .01$, $t = 2.81$, $n = 83$. This indicates that as daily use increases, sexual identity commitment increases when group commitment is high and decreases when group commitment is low, as evidenced by 5,000 bootstrap samples that do not cross zero (.03 to .52). In other words, higher group commitment strengthens the relationship between daily use and sexual identity commitment. This effect is greater when group commitment is higher. A visual representation of the model is available in Figure 1.
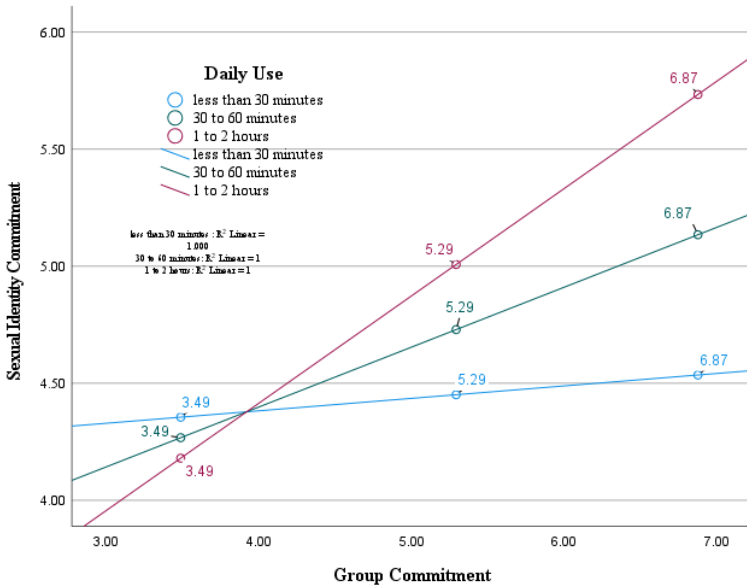
Figure 1. *Moderation model for Hypothesis 1.*
Note. This figure depicts the moderation for RQ1.
Variables are mean centered; $n = 83$.

Finally, we tested our second hypothesis, "*The association between group com-mitment and sexual identity commitment will be stronger when users have long-term motivations*," using a moderation analysis (see Figure 2) to determine whether the established association increases when using individuals who indicated long-term motivations as their primary motivation. Again, the SPSS PROCESS macro was used with Model 1 to test this relationship using age, ethnicity, and area as covari-ates. The model is presented in Figure 2. Variables were mean centered to aid in the interpretation of the results. There was a significant moderation of motivations on the association between group commitment and sexual identity commitment, $F(3, 88) = 4.82$, $R = .38$, $p < .01$. The significant interaction ($b = .32$, $SE = .15$, $p = .04$) indicates the presence of the moderation effect. These variables accounted for a significant amount of the variance, $\Delta R^2 = .04$, $\Delta F(1, 88) = 4.50$, $p < .01$, $t = 2.12$, $n = 92$. There was a significant association between group commitment and sexual identity commitment for participants whose primary motivation was long-term ($b = .40$, $SE = .11$, $p < .001$) and no association for participants whose primary mo-tivation was short-term ($b = .09$, $SE = .09$, $p = .36$), as evidenced by 5,000 bootstrap samples that do not cross zero (.02 to .61). Therefore, H2 is supported. A visual representation of the model is available in Figure 2.

Discussion

Sexual identity commitment has numerous positive offline implications (Chong et al., 2015; Kertzner et al., 2009; Seibt et al., 1995). Despite prior research theorizing about the relationship between cognitive affiliation with online groups, sexual identity formation, and wellbeing among MSM (Chong et al., 2015), ex-
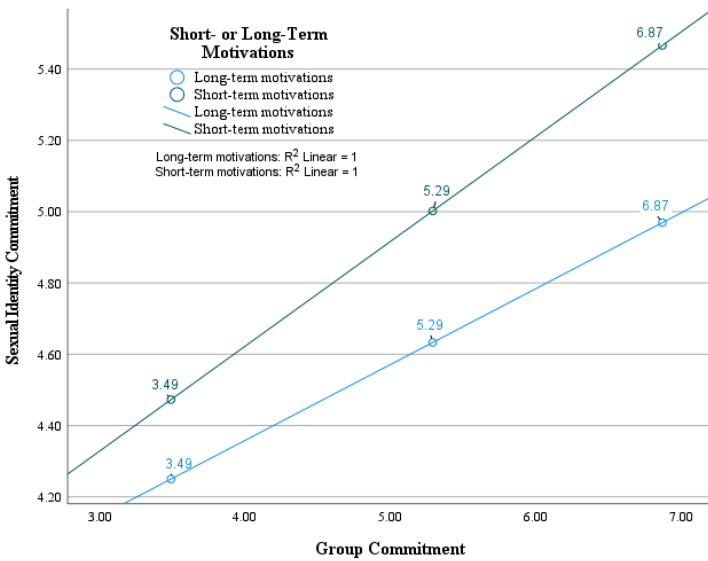
Figure 2. *Moderation model for Hypothesis 2.*
Note. This figure depicts the moderation analysis for H2.
Variables are mean centered; $n = 92$.

ploring communication and group commitment in transient online spaces (i.e., hookup apps) attends to recent calls for scholars to understand the underlying social processes within online communities (Borah, 2015) and queer hookup application research (Watson et al, 2017). Specifically, we used SIT and SCT as a lens to examine how group commitment influences the relationship between daily GPS-based hookup application use and sexual identity commitment among the MSM community.

We questioned whether engaging in shared social—and niche—virtual spaces would increase the salience of a sexual minority identity and commitment to a sexual minority group. This study is a noteworthy start to extending SIT to niche networks, demonstrating that despite group commitment playing an important role in an individual's sexual identity commitment, communication with virtual group members was not significantly related to group commitment. Our analysis does not suggest a causal relationship, rather clarifies the relationship between communicating with group members on GPS-based hookup applications, group commitment, and sexual identity commitment.

The results of the moderation revealed that group commitment moderates the relationship between daily application use and sexual identity commitment. Specifically, as daily use of hookup apps increases, sexual identity commitment increases when group commitment is high and decreases when group commitment is low RQ1. Additionally, the association is stronger among individuals who have long-term motivations for using such applications (H2). Below, we discuss findings as they relate to social identity theory and niche networks.

Social and Sexual Identity

First, group commitment and sexual identity commitment were positively correlated (H1), which suggests sexual identity is a category of MSMs' social iden-

tity. This finding provides some initial support for SIT. Social identity theory argues that an individual's identity is amplified through a feeling of connectedness to a specific social group (Tajfel, 1978). Our study demonstrates that group commitment plays an important role in an individual's sexual identity commitment; however, we did not find a significant relationship between app use and group commitment. Thus, the research question findings did not fully support SIT's assertation that individuals socialize their identity through group communication on hookup applications, which calls into question how identities are socialized in virtual spaces.

Despite not identifying a relationship between app use and group commitment, our findings support existing claims that online sexual minorities are inspirational and helpful to socializing other marginalized users and forming their identities (Craig & McInroy, 2014; Gray, 2009). Whereas niche networks, in general, can benefit questioning men as they navigate and explore their sexual identity, hookup applications for MSM do not appear to socialize MSM to the sexual minority community. Nevertheless, multi-dimensional portrayals of sexual identities remain overwhelmingly popular with sexual minorities today (McInroy & Craig, 2017), and hookup applications are just one of the many niche networks available to MSM and those who are left out of traditional representations of a primarily heterosexual culture.

Moderating Effect of Group Commitment

Whereas SIT implies that group commitment mediates the relationship between hookup app use and sexual identity commitment, instrumental communication and ephemeral relationships facilitated across hookup applications might constrain how SIT's underlying theoretical assumptions unfold on hookup applications. Although our analysis shows that hookup app use, group commitment, and sexual identity commitment are related and partially facilitated on hookup applications, the specific relationship is a moderating one. The moderation analysis revealed that group commitment moderates the relationship between daily application use and sexual identity commitment (RQ1). As daily use of hookup applications increased, and when individuals felt more committed to the group, they also had more sexual identity commitment. When their commitment to the group was low, on the other hand, they had less sexual identity commitment. These findings are important for understanding social identity processes that might occur within virtual groups and across different forms of computer-mediated communication.

That sexual identity commitment is associated with sexual minority group commitment supports SIT and suggests that sexual identity is a component of MSMs' social identity. Social identity group memberships are structured using social categorizations and emotional involvement with other group members. Group members share a common definition of themselves, share norms, and develop a consensus of the group evaluation (Tajfel & Turner, 1979). Considering this, MSM who use GPS-based hookup applications likely engage in other informal learning spaces—mediated and otherwise—which contribute to their emotional involvement with the sexual minority group.

However, app use was not related with group commitment in our study, which suggests hookup apps might not facilitate the same sense of common reality, emotional bonding, or cognitive closeness as other niche networks and informal

learning spaces (Chong et al., 2015; Gee & Hayes, 2012). Despite many users seeking romantic connections and sustained relational contact through applications (Miller, 2015; Van De Wiele & Tong, 2014), hookup applications do not appear to be spaces for experiencing relational bonding or emotional significance that other media and offline interactions are known to facilitate (McKenna & Bargh, 1998; Tajfel & Turner, 1979). A prevailing assumption that hookup applications are used to create noncommitted relationships and manage casual hookups (Watson et al., 2018) might shape how users experience group commitment or see themselves as a part of the user community.

Our results complicate SIT (Tajfel & Turner, 1979) and self-categorization theory (Turner, 1987) in hookup application communities by suggesting that an *existing* positive evaluation and identification with the minority group not found on hookup apps is likely important to understanding the relationship between experiencing sexual identity commitment and hookup application use. Consistent with SIT, sexual identity commitment is positively associated with group commitment; however, communicating on hookup applications alone might not trigger users to experience feeling cognitively connected with the broader MSM group (Tajfel, 197). MSM engaging with minority group members through diverse communication modes and channels might experience greater group commitment than through hookup applications alone.

As such, despite the positive relationship between social media use, group membership, and wellbeing among sexual minorities (Chong et a., 2015; Kertzner et al., 2009), MSM should not rely solely on communication within hookup applications to experience cognitive connections with minority groups. GPS-based hookup applications for MSM are just one of the many niche networks—which continue to grow each year—that might benefit sexual minorities as they explore their sexual identity and gratify their desires (see also blogs, news sites, general SNSs; Gudelunas, 2012; McInroy & Craig, 2017; Miller, 2016). To experience greater sexual identity commitment by using GPS-based hookup applications, MSM might use hookup applications alongside other social media that offer dynamic representations of MSM group members, which should enhance feeling connected with such groups. Thus, hookup applications should also be explored alongside media use (e.g., social networking sites, traditional media) and among other queer populations (Watson et al., 2017).

Furthermore, our results suggest it is important to qualify scholars' claims that computer-mediated communication alters sexual identity exploration and commitment. Specifically, GPS-based hookup application users might not experience a change in their sexual identity commitment by simply using or increasing their use of an MSM social media. Users only report enhanced sexual identity commitment when they also feel cognitively connected to the group. Therefore, although media are known to be important socializing agents for sexual minority individuals (Bargh & McKenna, 2004; Bond et al., 2009; Craig & McInroy, 2014) and GPS-based hookup applications are beneficial for finding and connecting with similar others (Gudelunas, 2012; Miller, 2015), our study suggests hookup applications and other media that facilitate potentially ephemeral interactions should be scrutinized for their socializing abilities.

Motivations

This study expands on prior research that has only focused on Grindr (Taylor et al., 2017) by exploring the motivations for using GPS-based hookup applications, in general. Overall, there are different motivations for using GPS-based hookup applications, which suggests that niche networks for marginalized individuals are viable media to gratify more than just sexual motivations. The findings showed that the effect of group commitment on the relationship between daily application use and sexual identity commitment was stronger among individuals who had long-term motivations for using GPS-based hookup applications (i.e., to connect with the community, to make new friends, or to find someone to date). Hajek (2015) notes that an individual's self-concept can be context-dependent and can shift as they transition between different interpersonal contexts. Furthermore, Hajek (2015) posited gay men participate in social strategies to feel cognitively connected with group members of a particular social category. Our study adds nuance to this claim in the context of hookup applications, suggesting that motivations and outcomes are closely linked.

Being involved with a gay community is not accompanied by as much stigma as it once was, partially in response to the digital media and niche networks that were explored in this study. Sharing social experiences with a perceived group member can decrease sexual stigma, perpetuate positive gay culture, and facilitate the growth of niche networks for MSM (Taylor et al., 2017). Scholars should continue exploring how motive interacts with the relationship between GPS-based hookup application use and outcome variables, as well as motivations and outcome variables among other niche networks that facilitate sexual minority connections. Our study suggests that although niche networks might be powerful socializing agents, in general, scholars should continue exploring the effects of individual mediums and motivations (Miller, 2015) to draw specific conclusions, rather than make broad and generalized claims about new media.

Limitations and Future Research

Although this study represents one of the first to holistically investigate the effects of GPS-based hookup applications for MSM on sexual identity commitment and group commitment, the results of the study are limited. First, the data are cross-sectional, and the findings are limited to the sampled population and cannot demonstrate any causal relationship. By recruiting, in part, on LGBTQ+-specific forums (e. g., r/Grindr, r/gay) we were able to get a broad sample of participants, however, the sample is disproportionately Caucasian and from the South. While this is representative of MSM hookup application users (Bauermeister et al., 2014), future studies should address this trend by purposively sampling users. In particular, the influence of regional cultural values may also be important when considering social goals, group experiences, and identity commitment. Because GPS-based hookup applications are location-aware and often match users with nearby connections, geographical location arguably impacts users' behavior, self-presentation, and exposure to community norms (Blackwell et al., 2015). Furthermore, certain types of GPS-based hookup application users may have been more likely to take the survey, possibly contributing to sample bias in the results.

There is also a potential for self-report bias in the survey. Participants may have had difficulty recalling the amount of time spent on the applications concerning the amount of time they spent sexting with other users. These mobile applications afford users the ability to always check notifications, browse potential partners, and sporadically participate in conversations throughout the day. Future research should include measures for the intensity of use to addresses this limitation by assessing frequency alongside additional questions in the measure.

Lastly, these findings should be considered in relation to the different media MSM use, in general. This study was concerned with hookup applications for MSM as it relates to sexual identity commitment and sexual minority group feelings. Therefore, generalizations cannot be made about different media or for different sexual minorities. Future research should explore these relationships across different media and extend findings to other queer users (Watson et al., 2017).

Conclusion

As niche networks for sexual minorities continue to grow in popularity, users have a wide array of options to actively engage in communication with group members and experience offline effects. Using hookup applications for MSM is not a predictor of group commitment or sexual identity commitment alone. Though, when GPS-based application users feel more committed to the group, they also have more sexual identity commitment; however, when their commitment to the group is low, they have less sexual identity commitment. Further, the effect is stronger when individuals have long-term motivations for using hookup apps. However, as our research suggests, social categorization and sexual identity commitment are complex phenomena that should continue to be examined through the context of specific online platforms.

In all, communication research is beginning to understand how MSM utilize GPS-based hookup applications to make sense of their sexual preferences, manage their sexual identity, and learn about sexual minority group characteristics. Our study explored the effect of group commitment on daily hookup app use and sexual identity commitment among MSM. The findings extend SIT to niche networks by demonstrating that feeling cognitively connected with LGBTQ+ groups is an important precursor to experiencing sexual identity commitment by way of connecting with others on GPS-based hookup applications for MSM.

References

Bargh, J. A., & McKenna, K. Y. (2004). The internet and social life. *Annual Review of Psychology*, *55*, 573–590. https://doi.org/10.1146/annurev.psych.55.090902.141922

Bargh, J. A., McKenna, K. Y. A., & Fitzsimons, G. M. (2002). Can you see the real me? Activation and expression of the "true self" on the internet. *Journal of Social Issues*, *58*, 33–48. https://doi.org/10.1111/1540-4560.00247

Bauermeister, J. A., Yeagley, E., Meanley, S., & Pingel, E. S. (2014). Sexting among young men who have sex with men: Results from a national survey. *Journal of Adolescent Health*, *54*(5), 606–611. https://doi.org/10.1016/j.jadohealth.2013.10.013

Bérubé, A. (2003). The history of gay bathhouses. *Journal of Homosexuality*, *44*, 33–53. https://doi.org/10.1300/J082v44n03_03

Blackwell, C., Birnholtz, J., & Abbott, C. (2015). Seeing and being seen: Co-situation and impression formation using Grindr, a location-aware gay dating app. *New Media & Society*, *17*(7), 1117–1136. https://doi.org/10.1177/1461444814521595

Bond, B. J., & Figueroa-Caballero, A. (2016). Exploring the relationship between computer-mediated communication, sexual identity commitment, and well-being among lesbian, gay, and bisexual adolescents. *Communication Research Reports*, *33*(4), 288–294. https://doi.org/10.1080/08824096.2016.1224159

Bond, B. J., Hefner, V., & Drogos, K. L. (2009). Information-seeking practices during the sexual development of lesbian, gay, and bisexual individuals: The influence and effects of coming out in a mediated environment. *Sexuality & Culture; New York*, *13*(1), 32–50. http://dx.doi.org.ezproxy.lib.uwm.edu/10.1007/s12119-008-9041-y

Borah, P. (2015). Emerging communication technology research: Theoretical and methodological variables in the last 16 years and future directions. *New Media & Society*, *19*, 616-636. http://doi.org/10.1177/1461444815621512

Chong, E. S. K., Zhang, Y., Mak, W. W. S., & Pang, I. H. Y. (2015). Social media as social capital of LGB individuals in Hong Kong: Its relations with group membership, stigma, and mental well-being. *American Journal of Community Psychology*, *55*(1–2), 228–238. https://doi.org/10.1007/s10464-014-9699-2

Craig, S. L., & McInroy, L. B. (2014). You can form a part of yourself online: The influence of new media on identity development and coming out for LGBTQ youth. *Journal of Gay & Lesbian Mental Health*, *18*, 95–109. https://doi.org/10.1080/19359705.2013.777007

Fitzpatrick, C., & Birnholtz, J. (2018). "I shut the door": Interactions, tensions, and negotiations from a location-based social app. *New Media & Society*, *20*(7), 2469–2488. https://doi.org/10.1177/1461444817725064

Gee, J. P., & Hayes, E. (2012). Nurturing affinity spaces and game-based learning. In C. Steinkuehler, K. Squire, & S. Barab (Eds.), *Games, Learning, and Society* (pp. 129–153). Cambridge University Press. https://doi.org/10.1017/CBO9781139031127.015

Gray, M. L. (2009). Negotiating identities/queering desires: Coming out online and the remediation of the coming-out story. *Journal of Computer-Mediated Communication*, *14*(4), 1162–1189. https://doi.org/10.1111/j.1083-6101.2009.01485.x

Grov, C., Breslow, A. S., Newcomb, M. E., Rosenberger, J. G., & Bauermeister, J. A. (2014). Gay and bisexual men's use of the Internet: Research from the 1990s through 2013. *Journal of Sex Research*, *51*(4), 390–409. https://doi.org/10.1080/00224499.2013.871626

Gudelunas, D. (2012). There's an app for that: The uses and gratifications of online social networks for gay men. *Sexuality & Culture*, *16*(4), 347–365. https://doi.org/10.1007/s12119-012-9127-4

Hajek, C. (2015). Social and psychological creativity in gay male midlife identity management. *British Journal of Social Psychology*, *55*(2), 227-243. https://doi.org/10-1111/bjso.12128

Hamer, J. S. (2003). Coming-out: Gay males' information seeking. *School Libraries Worldwide*, *9*(2), 73-89

Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). Guilford Press.

Jaspal, R. (2017). Gay men's construction and management of identity on Grindr. *Sexuality & Culture*, *21*, 187–204. https://doi.org/10.1007/s12119-016-9389-3

Kertzner, R. M., Meyer, I. H., Frost, D. M., & Stirratt, M. J. (2009). Social and psychological well-being in lesbians, gay men, and bisexuals: The effects of race, gender, age, and sexual identity. *American Journal of Orthopsychiatry*, *79*(4), 500–510. https://doi.org/10.1037/a0016848

Lehmiller, J. J., & Konkel, K. E. (2013). Commitment to the GLBT community: An investment model analysis of its antecedents and consequences. *Journal of Applied Social Psychology*, *43*(6), 1301–1312. https://doi.org/10.1111/jasp.12094

Macapagal, K., Moskowitz, D. A., Li, D. H., Carrión, A., Bettin, E., Fisher, C. B., & Mustanski, B. (2018). Hookup app use, sexual behavior, and sexual health among adolescent men who have sex with men in the United States. *Journal of Adolescent Health*, *62*(6), 708–715. https://doi.org/10.1016/j.jadohealth.2018.01.001

McInroy, L. B., & Craig, S. L. (2017). Perspectives of LGBTQ emerging adults on the depiction and impact of LGBTQ media representation. *Journal of Youth Studies*, *20*, 32–46. https://doi.org/10.1080/13676261.2016.1184243

McKenna, K. Y. & Bargh, J. A. (1998). Coming out in the age of the internet: Identity 'demarginalization' through virtual group participation. *Journal of Social Psychology*, *75*, 681-694.

Miller, B. (2015). "They're the modern-day gay bar": Exploring the uses and gratifications of socials for men who have sex with men. *Computers in Human Behavior*, *51*, 476–482. https://doi.org/10.1016/j.chb.2015.05.023

Miller, B., & Behm-Morawitz, E. (2016). "Masculine Guys Only": The effects of femmephobic mobile dating application profiles on partner selection for men who have sex with men. *Computers in Human Behavior*, *62*, 176–185. https://doi.org/10.1016/j.chb.2016.03.088

Mohr, J. J., & Kendra, M. S. (2011). Revision and extension of a multidimensional measure of sexual minority identity: The lesbian, gay, and bisexual identity scale. *Journal of Counseling Psychology*, *58*(2), 234–245. https://doi.org/10.1037/a0022858

Pew Research Center. (2013). *Survey of LGBT Americans*. Retrieved from http://www.pewsocialtrends.org/2013/06/13/a-survey-of-lgbt-americans/.

Rains, S. A., & Brunner, S. R. (2015). What can we learn about social network sites by studying Facebook? A call and recommendations for research on social network sites. *New Media & Society*, *17*, 114–131. http://doi.org/10.1177/1461444814546481

Rice, E., Holloway, I., Winetrobe, H., Rhoades, H., Barman-Adhikari, A., Gibbs, J., Carranza, A., Dent, D., Dunlap, S. (2012). Sex risk among young men who have sex with men who use Grindr, a smartphone geosocial networking application. *Journal of AIDS & Clinical Research*, *4*(5). https://doi.org/10.4172/2155-6113.S4-005

Roschke, K. (2014). Passionate affinity spaces on Reddit.com: Learning practices in the gluten-free subreddit. *Journal of Digital Media Literacy*, *2*. Retrieved from https://www.academia.edu/12465780/Passionate_Affinity_Spaces_on_Reddit_com_Learning_Practices_in_the_Gluten_free_Subreddit

Rusbult, C. E., Martz, J. M., & Agnew, C. A. (1998). The investment model scale: Measuring commitment level, satisfaction level, quality of alternatives, and investment size. *Personal Relationships*, *5*, 357–391.

Seibt, A. C., Ross, M. W., Freeman, A., Krepcho, M., Hedrich, A., Mcalister, A., & Ferna'Ndez-Esquer, M. E. (1995). Relationship between safe sex and acculturation into the gay subculture. *AIDS Care*, *7*(1), 85–88. https://doi.org/10.1080/09540129550126876

Snyder, S. (1989). Cruising: The semiotics of S&M. *Canadian Journal of Political and Social Theory*, *8*, 102–114.

Tajfel, H. (1978). *Differentiation between social groups: Studies in the social psychology of intergroup relations*. Academic Press.

Tajfel, H. & Turner, J. (1979). An integrative theory of intergroup conflict. In J. A. Williams & S. Worchel (Eds.), *The Social Psychology of Intergroup Relations* (pp. 33–47). Wadsworth.

Taylor, S. H., Hutson, J. A., & Alicea, T. R. (2017). Social consequences of Grindr use: Extending the internet-enhanced self-disclosure hypothesis. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems* (pp. 6645–6657). New York, NY: ACM. https://doi.org/10.1145/3025453.3025775

Turner, J. C. (1987). A self-categorization theory. In J. C. Turner, M. A. Hogg, P. J. Oakes, S. D. Reicher, & M. S. Wetherell (Eds.), *Rediscovering the social group: A self-categorization theory* (pp. 42–67). Basil Blackwell.

Van De Wiele, C., & Tong, S. T. (2014). Breaking boundaries: The uses & gratifications of Grindr. *Proceedings of the 2014 ACM International Joint Conference on Pervasive and Ubiquitous Computing*, 619–630. https://doi.org/10.1145/2632048.2636070

Watson, R. J., Snapp, S., & Wang, S. (2017). What we know and where we go from here: A review of lesbian, gay, and bisexual youth hookup literature. *Sex Roles*, *77*(11–12), 801–811. https://doi.org/10.1007/s11199-017-0831-2