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Lesbians' use of popular social media sites is associated with perceived drinking norms & interest in receiving personalized normative feedback on alcohol use

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Abstract

Alcohol-related problems disproportionately impact sexual minority women. Recent research suggests that lesbian-identified women overestimate peer drinking norms and therefore, personalized normative feedback (PNF) may be an appropriate and efficacious intervention strategy for reducing alcohol-related risks in this population. To inform the development and packaging of such interventions, this study examines lesbians' use of the popular social media sites Facebook, Instagram, Snapchat, and Twitter in relation to alcohol consumption, perceptions of peer drinking norms, confidence in normative perceptions, and interest in receiving alcohol PNF. Findings suggest that the lesbians who are most likely to benefit from a PNF alcohol intervention may also be the most readily reached via social media sites. Alcohol interventions that both recruit and deliver PNF via widely used social media platforms such as Facebook and Instagram represent a promising and cost-effective strategy to reduce heavy drinking among lesbians.

Introduction

Despite decades of research finding lesbian-identified women to be more likely than heterosexual women to engage in heavy alcohol use (e.g. Diamant, Wold, Spritzer, & Gelberg, 2000; Drabble & Trocki, 2005), experience alcohol-related problems (e.g., Dibble, Roberts, & Nussey, 2004; Hughes, 2005; Ricks, 2012), and become dependent on alcohol (e.g., Bolton & Sareen, 2011; Gedro, 2014), few evidence-based intervention or prevention programs have been developed to reduce drinking in lesbian communities (Rizer, Mauery, Haynes, Couser, & Gruman, 2015). However, recent findings suggest that the cost-effective personalized normative feedback (PNF) alcohol interventions, efficacious in reducing alcohol use in a number of sexual majority high-risk drinking groups, may also represent a viable and much needed method of mitigating lesbians' alcohol-related risks (Boyle, LaBrie, & Witkovic, 2016; Litt, Lewis, Rhew, Hodge, & Kaysen, 2015). Yet, as an often hidden and stigmatized population, lesbian women present unique recruitment challenges for alcohol interventionists and several important questions must be answered to inform the development and packaging of PNF interventions for this population including 1) how best

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to reach the lesbian women most likely to benefit from this intervention strategy and, 2) how to develop PNF formats for this population that are scalable and engaging.

PNF Interventions & Evolving Intervention Modalities

Rooted in social norms theory, PNF interventions prompt members of a target group or community to answer questions about their perceptions of peers' alcohol use and report on their own drinking (Berkowitz, 2004; Perkins, 2003; Perkins & Berkowitz, 1986). Then, group members receive individualized graphical reports designed to highlight discrepancies between their perceptions of peers' drinking, peers' actual drinking, and their own drinking (Berkowitz, 2004; Borsari & Carey, 2003; Perkins, 2003; Perkins & Berkowitz, 1986). Although yet to target heavy drinking sexual minority women, PNF interventions have effectively reduced alcohol consumption in a number of high-risk drinking populations including college students (e.g., Dotson, Dunn, & Bowers, 2015), military veterans (Pedersen, Parast, Marshall, Schell, & Neighbors, 2017), active duty service members (Pemberton et al., 2011), and working adults (Walters & Woodall, 2003).

Among researchers seeking to make PNF more cost-effective and scalable, intervention modalities have evolved from in-person, interviewer delivered PNF, to postal mail delivered PNF, to remotely delivered, web-based PNF (Lewis & Neighbors, 2015). Most recently, the burgeoning popularity of social media sites (SMS) and findings linking SMS variables to inflated perceptions of drinking norms (Boyle, Smith, Earle, & LaBrie, 2018; Davis et al., 2019; Fournier, Hall, Ricke, & Storey, 2013) and increased drinking (e.g., Brunborg, Andreas, & Kvaavik, 2017; Ohannessian, Vannucci, Flannery, & Khan, 2017) have fueled interest in how popular sites like Facebook and Instagram might be leveraged to improve both the efficacy and reach of PNF. To date, interventionists have successfully used Facebook to recruit hard-to-reach, heavy drinking military veterans into a PNF intervention (Pedersen et al., 2015), delivered PNF reports to high-risk college students via Facebook Messenger (Ridout & Campbell, 2014), and integrated familiar social media inspired features (e.g., avatars, profiles) into gamified PNF interventions for college students in an effort to bolster the believability of the normative statistics (e.g., LaBrie, de Rutte, Boyle, Tan, & Earle, 2019).

Normative Misperceptions Among Lesbian Community Members

Much like the other high-risk drinking groups commonly targeted by PNF interventions findings suggest that young adult and adult lesbians alike overestimate the frequency of drinking and quantity of alcohol consumed by their peers (Boyle, LaBrie, & Witkovic, 2016). Further, perceptions of other lesbians' descriptive drinking norms prospectively relate to lesbians' alcohol consumption in the standard reciprocal feed-forward fashion observed in other groups for whom PNF has been effective (Litt et al., 2015). As PNF interventions are generally most effective in reducing alcohol use among heavy drinking group members who are unaware that their drinking exceeds normative standards (Miller & Prentice, 2016), questions about how to best reach this type of lesbian community member with an intervention remain to be answered. Lesbian bars have been suggested as one possibility. Boyle et al. (2016) found that frequency of lesbian bar patronage was positive predictor of how much and how often participants perceived lesbian peers to drink, even after controlling

for participants' own drinking. Beyond lesbian bar patronage however, research has yet to investigate other factors that may similarly relate to elevated peer drinking norms in this population and potentially inform intervention development.

Like lesbian bars, mainstream SMS including Facebook, Instagram, Snapchat, Twitter, may also afford lesbian-identified women the ability to differentiate peer in-group members from out-group members, observe the behavior of fellow lesbians, and infer community norms based on these public observations. Although research suggests that sexual minority youth and adults alike use mainstream SMS more than their heterosexual peers (Seidenberg et al., 2017; Taylor, 2013), to our knowledge no studies have yet investigated SMS variables in relation to alcohol-related risks among lesbians. Although many online survey studies have used SMS to recruit convenience samples of sexual minority women, including recent alcohol norm investigations by Boyle et al., (2016), Ehlke, Stamates, Kelley, & Braitman, (2019), and Litt et al., (2015), researchers have discussed their SMS recruitment as a limitation to the generalizability of their findings and have not considered how social media involvement might inform perceptions of how much or how often other sexual minority women drink.

The Current Study

Informed by the growing literature linking social media-related variables to both perceptions of drinking norms and alcohol consumption in predominantly heterosexual samples of youth and emerging adults (e.g., Boyle et al., 2018; Brunborg et al., 2017; Davis et al., 2019; Ohannessian et al., 2017), the current study examines SMS involvement, alcohol consumption, and perceptions of lesbian peer drinking norms among a diverse sample of lesbian women ranging in age from 18 to 45 years. Seeking to inform the development of efficacious and scalable PNF interventions for this population, we examine whether frequency of SMS use is positively and uniquely associated with A) perceptions of lesbian drinking norms; B) confidence in the accuracy of ones' normative perceptions; and, C) interest in receiving alcohol PNF, after controlling for previously established correlates (e.g., age, frequency of lesbian bar patronage, and alcohol use).

Materials & Methods

Participants & Procedure

Five-hundred and twelve lesbian-identified women residing in the U.S. were recruited via informal friendship networks, email list-servs, meet-up groups, and advertisements on social media sites to complete a 10 minute, web-based survey. Participants ranged in age from 18 to 45 years old, with a mean age of 27 years (SD = 6.50) and represented 33 of the 50 US states; with the highest percentages of participants residing in California (n=64; 12.5%), New York (n=55; 10.8%), Texas (n=47, 9.2%), Colorado (n=34; 7.4%), and Ohio (n=27; 5.2%). See Table 1 for participant race/ethnicity information. Upon completion of the survey email addresses of participants were entered into a raffle for one of three $100 gift cards. This study was approved by the Institutional Review Board at Loyola Marymount University.

Measures

Social Media Use Frequency.—Previously published items asked participants to report the frequency with which they typically "check" popular SMS Facebook, Instagram, Snapchat, and Twitter across their electronic devices (smartphones, tablets, and computers) using five-point response scales (Boyle, LaBrie, Froidevaux, & Witkovic, 2016). Response options included: *I do not have an account* (0); *I check sporadically, on a monthly basis* (1); *I check regularly, on a weekly basis* (2); *I check between 1–3 times per day* (3); and, *I check 4 or more times per day* (4). The four SMS use variables were then summed to create a composite measure of SMS use frequency.

Perceived Lesbian Drinking Norms.—Participants were instructed to think about the "Typical lesbian of the same-age" in responding to items which asked them to estimate the average number of days per week the typical lesbian consumed alcohol, her average number of drinks per occasion, and her maximum number of drinks consumed on one occasion during the past 30 days. Following standardization, the 3 perceived norm items together exhibited a high degree of internal consistency (alpha = .77) and were averaged to create a single measure of perceived descriptive lesbian alcohol use norms.

Confidence in Perceptions of Drinking Norms.—After responding to drinking norm questions, participants were asked to rate how confident that were that their estimations of typical lesbian drinking were correct on a 7 point scale ranging from (1) not at all confident; to (7) extremely confident.

Interest in PNF.—Participants were asked, "Hypothetically, how interested would you be in finding out the ACTUAL drinking behaviors of other lesbians your age compared to your perceptions of their drinking and your own drinking?" Response options ranged from 0 (not at all interested) to 4 (very interested).

Additional Covariates.—Given the reciprocal relationship between perceived drinking norms and drinking behavior, participants were asked about their own alcohol use during the past 30 days using items parallel to those assessing normative perceptions (i.e. drinking days, average and peak drinks). These items also showed a high degree of internal consistency (alpha = .85) following standardization and were averaged to create a single measure of alcohol use to be controlled for across analyses. As another established correlate of perceived lesbian drinking norms is lesbian bar patronage (Boyle, LaBrie, & Witkovic, 2016), participants were also asked to indicate how often during the past 3 months they had gone to a lesbian bar or nightclub using response options ranging from 0 (never) to 7 (everyday). Participant age was also controlled for across analyses.

Data Analytic Plan

Following an examination of descriptive statistics (Table 1) and bivariate associations (Table 2), concurrent hierarchical linear regression models (Table 3) tested the abilities of parallel sets of variables to predict perceived lesbian alcohol use norms (model 1), confidence in normative perceptions (model 2), and interest in PNF (model 3). Initial model steps controlled for participant age, alcohol use, and frequency of visiting lesbian bars. The

predictor of interest, frequency of SMS use, was entered in respective second steps of models. Because both the perceived norms outcome in model 1 and the alcohol use covariate appearing in all models were computed using standardized variables, we elected to standardize variables across regression analyses.

Results

Descriptive Statistics and Bivariate Correlations.

Table 1 presents means and standard deviations for the individual items making up perceived drinking norm, alcohol use, and total SMS use frequency composites. Consistent with previous research (Boyle, LaBrie, & Witkovic, 2016), the average participant over-estimated the frequency and quantity with which lesbian peers consumed alcohol based on actual drinking norms derived from the sample. Examining the bivariate relationships between variables, participant age was not associated with alcohol use in this study, which is consistent with previous research finding that lesbian-identified women tend to decrease their drinking less so than heterosexual women as they age. Also notable, participant age was also bivariately unrelated to perceptions of peer drinking norms, frequency of visiting lesbian bars, and frequency of Facebook, Instagram, Twitter use. Snapchat was the only SMS that was significantly related to age, with greater use observed among younger participants. Further, consistent with findings from studies with other populations, (Brunborg et al., 2017; Davis et al., 2019; Ohannessian et al., 2017), alcohol use was correlated with SMS use, both as a composite and across each site individually. Finally, although we examine the relationship between perceived norms and SMS more fulsomely below, bivariate correlations revealed a strong relationship between perceived norms and the SMS use composite, with strongest relationships found for Instagram and Snapchat.

SMS use predicting perceived drinking norms

Results from Model 1 revealed that SMS use frequency was a significant predictor of perceived lesbian alcohol use norms, after holding constant participant age, alcohol use, and frequency of visiting lesbian bars. Notably, when appearing together in the second step of the model SMS use frequency was a stronger predictor of perceived lesbian drinking norms than was frequency of visiting lesbian bars.

SMS use predicting confidence in normative perceptions

After controlling for covariates in the initial model step, results indicated that SMS use frequency was also a significant predictor of confidence in normative perceptions, with greater SMS use was associated with greater confidence in the accuracy of one's perceptions of drinking norms. When appearing together with SMS use frequency in the second model step, lesbian bar patronage was also a significant positive predictor of confidence in normative perceptions.

SMS use predicting interest in receiving alcohol PNF

Model 3 revealed that SMS use frequency was also a significant and unique predictor of interest in receiving alcohol PNF, with heavier social media using participants reporting

greater interest in PNF. Meanwhile, neither participant age nor lesbian bar patronage were related to interest in receiving PNF in either model step.

Discussion

Results from this study replicate the finding that lesbian-identified women over-estimate peer alcohol use norms using a larger, more racially and geographically diverse sample, further underscoring the appropriateness of social norms-based intervention strategies for this population. Then, informing the design of such interventions, findings suggest that lesbians who use social media more frequently are more likely to overestimate the drinking of lesbian peers, have more confidence in these misperceptions, and have greater interest in how their drinking compares to peers. Thus, those who are most likely to benefit from a PNF alcohol intervention may also be the most readily reached via popular SMS. Alcohol interventions that both recruit and deliver PNF via widely used social media platforms such as Facebook and Instagram may represent a promising and cost-effective strategy to reduce heavy drinking in this high-risk and often hard to reach drinking population.

Despite our sample being older and in possession of a sexual minority identity, our findings are largely consistent with previous research investigating social media involvement in alcohol-related cognitions in predominantly heterosexual samples of adolescents and college students, for whom heavier self-reported social media use has been found to be cross-sectionally (Boyle, Smith, et al., 2018; Geusens & Beullens, 2016) and longitudinally associated (Erevik, Torsheim, Andreassen, Vedaa, & Pallesen, 2017; Nesi, Rothenberg, Hussong, & Jackson, 2017) with inflated perceptions of peer drinking norms and greater alcohol consumption. Interestingly, in this study's sample of lesbian women ranging in age from 18–45 years, age was not related to frequency of checking Facebook, Instagram, or Twitter, nor was it related to perceptions of peer drinking norms or alcohol consumption. While previous research has found that lesbian-identified women decrease their drinking as they age to a lesser extent than do heterosexual women (e.g., Burgard, Cochran, & Mays, 2005; Hughes & Wilsnack, 1994), the findings that perceptions of peer drinking norms and use of mainstream social media platforms do not decrease with age is a novel addition to the lesbian health literature.

Implications

Findings from this study provide clear and actionable insight into how personalized normative feedback interventions for this population might be packaged to maximize cost-effectiveness, scalability, efficacy, and engagement. As greater social media use was associated with elevated perceptions of peers' drinking, greater alcohol consumption, and interest in PNF, intervention recruitment efforts would be wise to target lesbians' frequenting these social media sites. As findings from this study also suggest that heavier social media using lesbians have greater confidence in their normative misperceptions of peers' drinking, and therefore, may be more resistant to changing these perceptions, delivering PNF in a way that maximizes credibility of the normative statistics while decreasing defensiveness may prove critical to intervention success. Emerging PNF intervention formats that collect norms data from group members in real-time (Earle,

LaBrie, Boyle, & Smith, 2018) and integrate popular social media features (avatars, profiles; Boyle, Earle, McCabe, & LaBrie, 2018; LaBrie et al., 2019) to represent the peers on which actual norms have been derived may have great utility for this population.

Beyond PNF, findings may also carry important implications for the development of other alcohol intervention and health promotion efforts for this population. Although the well-studied use of social media and hook-up apps among gay and bisexual men have informed the development and implementation of web-based substance use and sexual health intervention and prevention efforts for years now (for a review, see Tso, Tang, Li, Yan, & Tucker, 2016), parallel work focused on lesbian, bisexual, and queer-identified women has been slow to emerge. Meanwhile, the majority of lesbians in our sample had active Facebook (87%) and Instagram (78%) accounts and the average participant reported logging into these accounts, not just on a daily basis, but multiple times per day. Coupled with recent findings suggesting that sexual minority women increasingly prefer to receive health information online (Park, Rodgers, McElroy, & Everett, 2018) and via social media sites in particular (Flanders, Pragg, Dobinson, & Logie, 2017), the frequent patterns of Facebook and Instagram revealed in the current study offer appropriate mediums for targeted, culturally tailored health campaigns for lesbian-identified women.

Intervention research aside, results from this study also have implications for researchers conducting alcohol-focused survey research with lesbian-identified women primarily using advertisements on Facebook, Instagram, and Twitter to recruit their samples. Because greater use of these social media platforms increases the likelihood of exposure to survey study advertisements but is also related to inflated peer drinking norms and greater alcohol consumption, researchers must be careful to not generalize alcohol-related findings beyond their social media-reached sample.

Limitations & Directions for Future Research

This study is limited in that, although our large sample was geographically and racially diverse, data were cross-sectional and collected from a convenience sample of lesbian-identified women recruited from informal friendship networks, email list-servs, meet-up groups, and social media sites. Further, the current findings are specific to lesbians and cannot be generalized to other groups of sexual minority women (bisexual, queer). Although research suggests that these groups of sexual minority women similarly over-estimate drinking norms (Ehlke et al., 2019; Litt et al., 2015), relationships between their social media involvement, normative misperceptions, and drinking remain to be investigated. In addition, both the self-report nature of the SMS data and the SMS selected for this study may be limiting. This study employed a previously published, self-report measure of Facebook, Twitter, Instagram, and Snapchat use focused on the frequency of logging into these apps across devices (smartphones, tablets, computers). These particular social media platforms were selected due to their popularity among U.S. adolescents and adults and the fact that numerous alcohol-focused survey studies have recruited sexual minority women from these platforms without considering how use of these platforms may relate to drinking or alcohol-related cognitions. However, recent research has also emphasized the availability of both lesbian-focused web-series (Day, 2018) and user-generated content (Lovelock, 2019)

on video-based social media platforms YouTube and Vimeo, suggesting that, like other populations, the social media landscape is ever-evolving and researchers will need to stay up-to-date on the current most popular SMS. In light of the current study's findings, longitudinal studies should employ objective methods to assess lesbian, bisexual, and queer-identified women's' use of video-based and traditional social media platforms in relation to perceptions of drinking norms, other alcohol-related cognitions (implicit associations, alcohol expectancies), and alcohol consumption.

Finally, while this study revealed cross-sectional relationships between social media use, perceptions of norms, and drinking among lesbians, findings do not speak to explanations for these relationships. Research with populations of heterosexual adolescents and young adults suggests that social media use contributes to perceptions of drinking norms, and in turn, alcohol consumption via exposure to peers' alcohol-related posts (Boyle, LaBrie, Froidevaux, et al., 2016; Davis et al., 2019), and the peer reinforcement (e.g., "likes", positive comments) garnered by such content on these platforms (Boyle, Smith, et al., 2018). It is possible that exposure to alcohol-related posts from sexual minority peers may similarly inflate drinking norms. Alternatively, much research has documented the targeted, LGB-specific marketing campaigns of major alcohol brands in the U.S. (Belt et al., 2014; Drabble, 2000) and it is possible that more frequent social media use may increase exposure to advertisements portraying lesbian women consuming alcohol, which may in turn, increase perceptions of how much and how often other lesbians drink. Examining both potential avenues of social media-related normative influence among sexual minority women constitutes an important direction for future research with the potential to further inform alcohol intervention development.

Conclusion

Findings from this study underscore the appropriateness and promise of social-norms based alcohol interventions for lesbian identified women and suggest that the members of this population most likely to benefit from a PNF alcohol intervention may also be the most readily reached via mainstream social media sites, in particular, Facebook and Instagram. Further, these very same individuals may be most interested in, and receptive to, receiving alcohol PNF. Alcohol interventions that both recruit and deliver PNF via these widely used social media platforms, and integrate popular social media features like user avatars and profiles to increase appeal and credibility of the normative statistics, represent a promising and cost-effective strategy to reduce heavy drinking among lesbians ages 18 to 45 years old.

Acknowledgments

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Table1

Descriptive statistics for study sample (N=512)

	M (SD)	% (N)
Age in Years (range 18 to 45)	27.1 (6.5)	
Race/Ethnicity		
Caucasian/White		60 (307)
African American/Black		11 (56)
Hispanic/Latinx		15 (77)
Asian American		5 (26)
Native American/Alaskan Native		0.6 (3)
Native Hawaiian/Pacific Islander		0.4 (2)
Mixed Race		8 (41)
Alcohol Use (Z)	.00 (1.00)	
Own drinking days per week	1.84 (1.82)	
Own average drinks per occasion	2.50 (1.73)	
Own peak drinks on one occasion	4.25 (2.74)	
Perceived Drinking Norms (Z)	.00 (1.00)	
Typical lesbian drinking days per week	3.10 (1.81) ***	
Typical lesbian average drinks per occasion	3.92 (2.21) ***	
Typical lesbian peak drinks on one occasion	6.88 (2.58) ***	
Confidence in Normative Perceptions (1–7 scale)	3.85 (1.36)	
Interest in Receiving PNF (1–4 scale)	3.04 (1.85)	
Frequency of Lesbian Bar Patronage (1–6 scale)	1.90 (1.19)	
SMS Account Ownership		
Facebook		87.3 (447)
Instagram		77.5 (397)
Snapchat		58.0 (297)
Twitter		47.3 (242)
Frequency of SMS Use (Z)	.00 (1.00)	
Facebook Use Frequency	2.61 (1.29)	
Instagram Use Frequency	2.54 (1.42)	
Snapchat Use Frequency	1.38 (1.44)	
Twitter Use Frequency	0.89 (1.21)	

***
The perceived drinking norm significantly exceeded the corresponding actual drinking norm derived from the sample, $p < .00$

Table 2.

Bivariate Associations Between Study Variables (N=512)

	1	2	3	4	5	6	7	8	9	10	11
1. Age	-										
2. Alcohol Use (Z)	.02	-									
3. Perceived Drinking Norms (Z)	.04	.33***	-								
4. Confidence in Perceptions	.02	.14**	.07	-							
5. Interest in Receiving PNF	-.03	.17**	.09	.11*	-						
6. Lesbian Bar Patronage Freq	-.02	.27***	.22***	.21***	.03	-					
7. Total SMS Use Freq (Z)	-.14**	.26***	.23***	.16***	.14**	.13**	-				
8. Facebook Use Freq	.03	.14**	.11*	.10*	.15***	.03	.54***	-			
9. Instagram Use Freq	.05	.16***	.20***	.14**	.09*	.17***	.68***	.15**	-		
10. Snapchat Use Freq	-.40***	.18***	.17***	.09*	.13**	.14**	.66***	.12**	.28***	-	
11. Twitter use Freq	.01	.13**	.07	.06	-.04	-.02	.51***	.06	.14**	.10*	-

*
p<.05,

**
p<.01,

***
p<.001

Table 3.

Hierarchical regression results for SMS use frequency predicting peer alcohol use norms (Model 1) confidence in the accuracy of normative perceptions (Model 2) and interest in PNF (Model 3) after controlling for previously established correlates.

Step	Predictors	B	SE	$R^{2\ change}$	F^{change}	Df
Model 1 Z-Perceptions of Lesbian Alcohol Use Norms						
1	z-Age	.02	.03			
	z-Alcohol Use	.21 ***	.03			
	z-Lesbian Bar Patronage	.12 **	.03	.13	24.68 ***	3, 508
2	z-Age	.04	.03			
	z-Alcohol Use	.18 ***	.03			
	z-Lesbian Bar Patronage	.10 **	.03			
	z-SMS Use Frequency	.12 ***	.03	.03	13.79 ***	1, 507
Model 2 Z-Confidence in Accuracy of Normative Perceptions						
1	z-Age	.02	.04			
	z-Alcohol Use	.18	.04			
	z-Lesbian Bar Patronage	.09	.05		8.85 ***	3, 508
2	z-Age	.04	.04			
	z-Alcohol Use	.06	.04			
	z-Lesbian Bar Patronage	.17 ***	.05			
	z-SMS Use Frequency	.13 **	.05		8.60 **	1, 507
Model 3 Z-Interest in PNF						
1	z-Age	−.04	.04			
	z-Alcohol Use	.18 ***	.04			
	z-Lesbian Bar Patronage	−.02	.05		5.49 **	3, 508
2	z-Age	−.02	.04			
	z-Alcohol Use	.16 **	.04			
	z-Lesbian Bar Patronage	−.03	.05			
	z-SMS Use Frequency	.11 *	.05		5.42 *	1, 507

Model 1 Cumulative R^2=.15, $F(4, 507)$ =22.68; $p < .001$

Model 2 Cumulative R^2=.05, $F(4, 507)$ =8.90; $p < .001$

Model 3 Cumulative R^2=.04, F (4, 507) =5.51; $p < .001$

*
$p < .05$,

**
$p < .01$,

***
$p < .001$