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HIV risk in group sexual encounters: An event-level analysis from a national online survey of MSM in the U.S.

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Abstract

Introduction—Researchers have investigated group sexual encounters (GSEs) as potential sources for HIV/STI transmission among men who have sex with men (MSM); however, much of this work has focused on organized sex parties.

Aim: To compare behavioral and social characteristics of groups of men who engaged in three types of GSEs: threesomes, spontaneous group sex, and organized sex parties.

Methods—In 2012, 1,815 U.S.-based MSM completed an online survey.

Main Outcome Measure—We compared men based on their most recent type of GSE: threesome (68.2%), spontaneous group sex (19.7%), or organized sex party (12.1%).

Results—Using multinomial logistic regression, with type of GSE as the dependent variable, MSM who were HIV-positive, used stimulants (cocaine, methamphetamine, crack), consumed five or more alcoholic drinks, and reported receptive unprotected anal intercourse (UAI) during the most recent GSE had significantly higher odds of having had spontaneous group sex as compared to a threesome. MSM who were HIV-positive, not in a relationship, and did not report receptive UAI during the most recent GSE had significantly higher odds of having attended an organized sex party as compared to a threesome. MSM who were in a relationship, had consumed five or more alcoholic drinks, had used stimulants, and reported receptive UAI during the most recent GSE had significantly higher odds of having had spontaneous group sex as compared to an organized sex party. Compared to others, those having engaged in a GSE were more likely to report recent UAI (65% vs. 45%).

Conclusions—Men having engaged in a GSE were at greater risk for behaviors that transmit HIV and STIs. Unique social and behavioral characteristics inherent to threesomes, spontaneous group sex, and sex parties highlight the need to identify prevention strategies to help those who participate in GSEs reduce their risk for HIV and STI transmission.

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Keywords

group sex; sex parties; men who have sex with men; unprotected anal intercourse; gay and bisexual men; substance use

Introduction

In the U.S., men who have sex with men (MSM) are 44 times more likely to contract HIV than other men [1], and they accounted for 63% of all new HIV diagnoses in 2010—a 12% increase since 2008 [2]. For many MSM, sexual encounters involve negotiating sexual behaviors, condom use, and HIV status. Whereas, an encounter involving multiple partners inherently complicates this process. Researchers have begun investigating group sexual encounters (GSEs) as potential sources for HIV transmission, with much of this work focusing on organized sex parties [3–8]. Grov et al. [9] reported that 24.9% of MSM in their community-based sample had met sexual partners at sex parties in the last 90 days. The study compared MSM who met partners at private sex parties with those who met partners at commercial and public sex environments—men who attended private sex parties had higher rates of unprotected anal intercourse (UAI). A study of gym-attending MSM found that 23% reported having been to a sex party in the previous six months, and 8% had been to a sex party themed around barebacking [10]. Comparatively, a 2011 study of 540 MSM aged 18–29 found 8.7% had attended a sex party in the past three months; these men reported significantly higher numbers of male sex partners and were more likely to report drug use than men who had not attended sex parties [7].

With few exceptions [4, 5], prior work on sex parties has focused on the behavioral differences of men who do and do not attend sex parties, rather than on the behaviors of men *during* sex parties. In a sample of 40 MSM who either attended or hosted sex parties in Massachusetts, Mimiaga et al. [5] reported that 58% had used alcohol, 50% had used drugs, and 25% reported UAI during their most recent sex party attended. In a sample of 86 HIV-positive men recruited at a sex party for HIV-positive men only in New York City, Clatts et al. [4] reported that 46.5% received UAI to the point of ejaculation and 50% engaged in insertive UAI to the point of ejaculation. The study anecdotally noted that condoms were seldom used, but did not report on UAI that did not result in ejaculation.

Between 2007 and 2008, the *Three or More Study* (TOMS) surveyed 994 MSM in Australia who had engaged in a GSE in the previous five years [11–16]. Participants were recruited from a variety of sources including the Internet, sex on premises venues (e.g., bathhouses), and community based setting. In this study, GSEs could have ranged from threesomes to organized sex parties. Over one third (36.5%) said their last GSE involved two other men (i.e., a threesome) and 16.8% said it involved more than five other men. The majority (53.7%) of all participants said their last GSE was completely spontaneous. In this study, 53.8% were in a relationship, and 32.5% of these men said they attended their last GSE with their partner. Up to 48.5% reported UAI during their last GSE, with UAI being more prevalent among HIV-positive MSM. Finally, 10.7% reported drinking five or more drinks during the last GSE and 51.3% reported illicit drug use (33.6% nitrate inhalants, 15.4% MDMA/Ecstasy, 11.6% methamphetamine, 13.3% marijuana). Of interest, this study did not differentiate between threesome encounters and other encounters with regards to behaviors such as attending with a main partner, substance use, or UAI.

Much of what is known about threesome encounters among MSM has emerged from research on couples [c.f., 17]. For example, Parsons et al. [18] described partnered gay and bisexual men who only have sex with a third “outside” partner together as “monogam^{ish}.”

In total, 14.9% of couples in their community-based sample fell into this category. Such data, however, do not characterize the types of behaviors that occur during those events, and do not provide insight into the behaviors of men who may engage in threesome sex outside the structure of a partnered relationship.

Taken together, findings to date reveal that there are behavioral differences between men who engage in GSEs and those who do not, including differential rates of UAI and substance use. However, studies to date have relied strictly on comparisons of those who do and do not participate in GSEs without much attention to the differences that occur within different types of GSEs.

Aims

Researchers have indicated that GSEs may be potential sources for HIV and STI transmission; however, much of this work has been focused on organized sex parties [3–8]. Meanwhile, studies have demonstrated that GSEs can range from spontaneous to organized, and be limited to threesome encounters or large organized sex parties. There is some evidence to suggest that these types of events may differ with regard to sexual behavior, attendance with a partner, and substance use. In order to develop appropriate HIV prevention interventions for GSE, it would be necessary to first fully describe unique social and behavioral characteristics inherent to different types of events. Using a sample of U.S.-based MSM surveyed online, we studied men who had engaged in a GSE. We categorized participants into three groups based on their most recent GSE (threesomes, spontaneous group sex, organized sex party), and compared these groups on a variety of contextualizing factors. Our goal is to provide greater understanding of unique and similar facets of these types of events.

Method

Participants and Procedures

For a 30-day period in spring 2012, the research team advertised on a popular, cost-free sexual networking website for MSM selected because of its diverse membership with regard to age, race, ethnicity, and HIV status of members. Our ad read, “Adventurous sex life?” and indicated that participants could receive compensation for joining in a research study. Those clicking the ad were redirected to our survey. The informed consent indicated *this* online survey had no incentive, but the survey would screen them for other studies for which they could be compensated if they joined. The survey took ~10 minutes to complete. Procedures were approved by the City University of New York Institutional Review Board.

We configured the survey to count the number of times it was opened (i.e., ad clicks) and from this we estimated that the banner was clicked on 10,900 times. Approximately one-third ($n = 3,334$) of the clicks resulted in a participant providing informed consent and beginning the survey. Eleven of these men indicated being under the age of 18 and were automatically directed to the end of the survey. Of the remaining 3,323 people who provided informed consent, 2,288 (68.9%) reached the end of the survey. From these, the following respondents were excluded from further analyses: 108 individuals (4.7%) outside the US; four individuals (0.1%) not born biologically male; 15 individuals (0.7%) not male-identified; 97 individuals (4.2%) who reported no sex with another man in the last 90 days (skipping a majority of the survey); and one man who did not indicate his sexual identity. Of these 2,063 remaining surveys, an additional 248 (12.0%) cases indicated they had never taken part in any form of GSE. We compared these 248 men against those having taken part in a GSE; however, the majority of analyses were limited to the 1,815 men who had taken part in some form of GSE.

Main Outcome Measures

Demographic characteristics—Participants completed measures for demographic characteristics including age, race or ethnicity, sexual identity, HIV status, relationship status, and age. Response options can be found in Table 1.

Characterizing the most recent group sex encounter—Participants were asked, “The most recent time you engaged in any sexual activity with more than one other person, what kind of experience was it?” Response choices included, “Threesome,” “Spontaneous group sex,” or an “Organized sex party.”

Substance use and sexual behavior during most recent multiple partner sexual encounter—Participants were asked a series of questions about their most recent GSE. They indicated how long ago the encounter was and whether they had used alcohol and a range of drugs immediately before or during that encounter. The list of drugs is shown in Table 2. Participants indicated if they were in a relationship at the time of that encounter. Those in a relationship indicated if their partner knew of the encounter and whether they attended with their partner.

Participants also responded whether they had engaged in eighteen different sexual behaviors during their most recent GSE. In the interest of brevity, and because of the known HIV transmission risks with main partners [19], participants were instructed to include sexual behavior with main partners in their responses. Behaviors included receptive and insertive anal sex (with and without condoms), oral sex (insertive and receptive), and other sexual behaviors such as watersports (urine exchange), rimming (oral-anal sex), and fisting. Sixteen of the eighteen items are shown in Table 2—no participants reported vaginal sex during their most recent GSE (with or without a condom), and thus these variables have been omitted from analyses. Participants also indicated how many men they had sex with during their most recent GSE.

Analytic Plan

As appropriate, we used chi-square and Kruskal Wallis tests to compare three groups of men based on their most recent type of GSE: (1) threesome, (2) spontaneous group sex, or (3) an organized sex party. We compared participants’ reports of substance use and sexual behavior during their most recent encounter as well as the length of time since the encounter occurred and whether they were in a relationship at the time. As a post hoc analysis, and as appropriate, we used partial chi-square and paired Mann Whitney *U* with LSD criterion. Multinomial logistic regression was used to compare type of GSE through a combination of binary logistic regressions (threesome v. spontaneous group sex, threesome v. organized sex party, spontaneous group sex v. organized sex party). Independent variables of interest for these models included HIV status, stimulant drug use during the encounter (cocaine, methamphetamine or crack), race, relationship status at the time, heavy alcohol use (5+ drinks) during the encounter, receptive UAI during the encounter, and whether the encounter occurred in the last year (vs. not)—these variables were selected based on conceptual relevance and significance in bivariate analyses. This approach allowed for direct comparisons in how various demographic and behavioral characteristics were associated uniquely with the type of GSE (Table 3).

Results

Participants resided in 49 of the 50 states and Puerto Rico (none were from New Hampshire). The majority of those who completed a survey indicated being White, identified as gay, and reported being HIV-negative (Table 1). Mean age was 36.2 years (*SD*

= 12.2). Thirty-two percent were currently in a relationship, 91.6% had anal sex with a male partner in the last 90 days, and 64.8% reported UAI with a male partner in the last 90 days.

Compared to men who had taken part in a GSE ($n = 1815$), significantly smaller proportions men having *never* taken part in a GSE ($n = 248$) reported being HIV-positive (10.1% vs. 23.5%, $\chi^2 = 23.1, p < .001$), used drugs in the last 3 months (35.1% v. 61.2%, $\chi^2 = 60.9, p < .001$), were gay identified (69.0% vs. 77.7%, $\chi^2 = 14.8, p = .002$), White (54.0% vs. 61.7%, $\chi^2 = 5.36, p = .02$), engaged in UAI with another male in the last 90 days (44.8% vs. 64.8%, $\chi^2 = 37.3, p < .001$). Men having never taken part in a GSE were also significantly younger than others ($M = 32.1$ vs. $M = 36.8, t = 5.82, p < .001$)

Participants provided details on their most recent GSE ($n = 1815$, see Table 2). The majority (68.2%) indicated this encounter was a threesome, 19.7% said spontaneous group sex, and 12.1% indicated it was an organized sex party. The type of GSE attended was significantly associated with HIV status—only 20.0% of men who had a threesome at their last GSE were HIV-positive, compared with 31.8% of men who had spontaneous group sex as their last GSE and 30.1% of men who went to an organized sex party as their last GSE, $\chi^2(2) = 27.9, p < .001$. Compared to men whose last GSE was a threesome, a significantly larger proportion of men whose GSE was spontaneous group sex reported having done so recently. Compared to others, a significantly smaller proportion of men whose last GSE was an organized sex party said they were in a relationship at the time. Among those who were in a relationship at the time ($n = 583, 32.1%$), a significantly larger proportion of men whose last GSE was a threesome had done so with their partner compared to the other two groups. More than half (55.8%) of the men whose last GSE was an organized sex party did so without their partner's knowledge and had yet to disclose this to their partner.

Due to low frequencies of use, we lacked sufficient power determine if there were significant differences in type of GSE by ketamine, crack, or heroin use during that encounter. However, there were significant differences in seven of the eight other substances. Compared to others, a significantly larger proportion of men whose last GSE was spontaneous group sex reported having consumed five or more alcoholic drinks, or used cocaine, methamphetamine, MDMA/ecstasy, or GHB/GBL during that encounter.

Sexual Behavior During Last GSE

We compared participants on the different types of sexual behaviors they engaged in during their last GSE. There were no significant group differences in the proportion who reported insertive UAI, mutual masturbation, or scat play (fecal play). Compared to others, a significantly larger portion of men whose last GSE was spontaneous group sex reported receptive UAI and being rimmed (oral sex with the anus). Compared to others, a significantly smaller proportion of men whose last GSE was a threesome reported urine play and felching (i.e., orally withdrawing semen from a partner's anus). Compared to men whose last GSE was a threesome, a significantly larger proportion of men whose last GSE was spontaneous group sex reported BD/SM, toy play, and fisting (insertive and receptive). Compared to men whose last GSE was a threesome, a significantly smaller proportion of men whose last GSE was an organized sex party engaged in oral sex (insertive or receptive). Values are shown in Table 2.

Table 3 presents the results of a multinomial logistic regression, with type of GSE as the dependent variable. As seen in Section A of Table 3, men who were HIV-positive, had used stimulants (cocaine, methamphetamine, or crack), had consumed five or more alcoholic drinks, and reported receptive UAI during the most recent GSE had significantly higher odds of having had spontaneous group sex as compared to a threesome. Men who were HIV-positive, not in a relationship, and did not report receptive UAI during the most recent

GSE had significantly higher odds of having attended an organized sex party as compared to a threesome. As seen in Section B of Table 3, men who were in a relationship, had consumed five or more alcoholic drinks, had used stimulants, and reported receptive UAI during the most recent GSE had significantly higher odds of having had spontaneous group sex as compared to an organized sex party.

Discussion

Using data from an online study of MSM in the US, we found 88.0% had taken part in some type of GSE at one point in their lives. Those who had engaged in a GSE were behaviorally and characteristically different from those who had never taken part in a GSE, with findings suggesting that men who had participated in a GSE might be at greater risk for transmitting HIV and STIs. We classified these men into three groups based on what they reported as their most recent type of GSE (threesomes, spontaneous group sex, or organized sex parties), and compared behavioral and situational characteristics for each type of GSE. We found that the most common type of recent GSE was a threesome. Conversely, much of the prior research on GSEs has focused on organized sex parties, with little attention to threesome sex or spontaneous group sex. These three groups demonstrated significant differences with regard to sexual behavior, substance use, and relationship status at the time of the event. By definition, threesome encounters involved three partners whereas organized sex parties might involve dozens, thus it was unsurprising to see many significant differences. However, this study contributes to our knowledge on the unique social and behavioral characteristics associated with these of sexual events.

There is much research indicating that, compared to others, men who attend organized sex parties engage in higher rates of UAI [4, 6, 9, 10], yet there is less known about rates of UAI for men who engage in spontaneous group sex or threesomes. Our study found that rates of UAI during most recent GSE were high overall, while rates of *receptive* UAI were significantly higher for men who had engaged in spontaneous group sex (43.3%) than for the other two groups, even after adjusting for other variables. These data suggest that GSEs present high risks for HIV and STI transmission, with transmission risks being highest during spontaneous group sex.

In comparing our results to others who have conducted event-level analyses of a recent event, we found several interesting similarities and differences. Roughly one-third of participants in our data reported insertive or receptive UAI during their last GSE, which was higher than the 25% reported by Mimiaga et al. [5]. Mimiaga et al. [5] used a small community-based sample of MSM in Massachusetts. However the prevalence of UAI in our sample was lower than the 48.5% reported in the TOMS study [11] and by Rosenberger et al. [20]. In the Rosenberger et al. [20] study—which was from a U.S.-based online survey of 24,787 MSM members of a sexually-oriented website known to attract older, less racially and ethnically diverse, and more HIV seropositive MSM—54.5% of the men who had anal sex reported the event was unprotected. Both our study and Rosenberger et al. identified rates that were markedly higher than CDC estimates, suggesting that only 25% of MSM have engaged in recent UAI with a casual male partner [21]. These differences may be related to sampling techniques, and suggest that recruitment efforts targeting online sexual networking venues may be successful in reaching MSM at higher risk for HIV transmission [22].

Adjusting for covariates, men who engaged in spontaneous group sex as their last GSE were also at higher odds than others for engaging in hazardous alcohol use and stimulant drug use during that encounter. At the event-level, these data suggest drugs and alcohol were associated with spontaneous group sex, and more research would be necessary to determine

temporality between substance use and spontaneous group. Qualitative interviews might be an appropriate complimentary approach to disentangle temporality between substance use and spontaneous group sex [c.f., 5]. Qualitative data from the TOMS study suggests overlap between the two, each contributing synergistically [11, 14].

Type of GSE was also associated with different constellations of sexual behaviors during that event. In general, men who attended threesomes were lower on behaviors commonly considered kink (e.g., BDSM, toy play, felching, scat, watersports, fisting), while kink was higher during spontaneous group sex. The wider range of sexual behaviors experienced during spontaneous group sex may be characteristic of the innate spontaneity of the event, or may be related to greater substance use during events, as drugs and alcohol reduce inhibitions [23, 24]. Given the variety of sexual behaviors and high prevalence of substance use and UAI, these findings highlight the critical need for further investigation of spontaneous group sex events.

Compared to others, and adjusting for covariates, men whose last GSE was an organized sex party were significantly less likely to be in a relationship at the time of that encounter. In contrast, among those who were in a relationship at the time of their last GSE, sizeable proportions attended without their partner knowledge and never told them. Emerging research has highlighted that many partnered gay and bisexual men negotiate non-monogamy including explicit rules around permissible non-monogamous behavior [25–27]. It may be that the act of not disclosing a GSE was part of an agreement (i.e., “You are allowed, but I don’t want to know about it”) or done because the behavior was considered unacceptable to one’s partner. This would be an arena for future research.

It is also noteworthy that, among those in a relationship, nearly half (44.4%) of those whose last GSE was a threesome did so with their partner. As noted, we found many differences between threesomes and other encounters and the extent to which these encounters occurred with a main partner deserves further consideration. For this study, we have described events involving three or more men as “group” sexual encounters; however, when two members of the group constitute a single couple (i.e., conceptualizing a couple as a single sexual unit), calling this event “group sex” may be problematic. To be consistent with prior research [11–16], we have continued the use of the acronym “GSE,” but perhaps a more generic descriptor such as multiple partner sexual encounter (MPSE) is warranted when including threesomes where two of the participants are partnered.

Limitations

There are several limitations worth noting. An event-level analysis provides a detailed account of behaviors and social characteristics; however, it focused on only one such event and may not be characteristic of an individual’s behavior overall. For example, it would be interesting to know if the same individual reported similar behaviors at different GSEs or in sexual encounters that involve only one other partner. Similarly, it would be useful to know if men who have participated in all three types of GSEs were different from those who only ever participated in one or two.

The quantitative survey allowed the research team to gather data across a wide range of variables; however, questions were limited in the interest of brevity and responses were closed-ended. For example, this study was able to characterize spontaneous group sex events from organized sex parties. However, it is not clear to what degree all spontaneous group sex events were, in fact spontaneous, nor to what degree organized sex parties were actually organized. That is, when a man invites several men he would like to have sex with over for dinner, and it turns sexual—it might be perceived as organized by the host, but spontaneous by the guests. It might also have been useful were we able to differentiate spontaneous

threesome encounters from organized/planned threesome encounters. In the interest of brevity, men were asked to provide details at the event level involving all partners at said event. Further contextualizing types relationships between individual partners at the event level would have provided added insight [c.f., 11]. Data collection procedures to gain such detail may not be suitable for an online cross-sectional survey, thus alternate designs deserve consideration. In addition, although the impersonal nature of the Internet enhances a sense of anonymity, responses were self-reported.

Findings are based on an online sample of men recruited from a single sexual-networking website, thus limiting generalizability. However, this sample was younger and more racially and ethnically diverse than previous studies having used similar procedures on other MSM sexual-networking websites [20, 28–30]. At 69%, the completion rate for those who provided informed consent in our study was higher than most online studies of MSM [20, 30–32]; however, we lack sufficient data on those who did not complete to determine if attrition was random. Attrition patterns suggest that non-completion may be due, in part, to fatigue [30, 33]. Although there was no incentive to participate in this online study, our survey's aim was to recruit/screen for larger incentivized research studies, and this might have motivated individuals to complete the survey more than once. We believe, however, that serial responses were rare. In order to be paid for a larger study, one would have to present for a face-to-face assessment in which their contact information would be recorded.

Conclusion

Notwithstanding these limitations, our study has implications for future research. The vast majority of this sample had engaged in some type of GSE, and these men were at greater risk for behaviors that transmit HIV and STIs. This highlights a need for more research on this population as well as effective intervention strategies. Future research is needed to better understand the characteristics of men who attend GSEs more and less frequently, those who attend certain types of parties, and whether risk within sex parties is a result of individual characteristics of men who attend the parties or about the environment of the parties themselves (i.e., are these between-person or within-person differences?).

Compared to the other types of GSEs assessed, spontaneous group sex events appeared to confer the greatest risk for HIV and STI transmission and simultaneous substance use. More research is needed to further disentangle the association between substance use and spontaneous group sex as well as an urgent need to identify strategies that may help reduce the spread of HIV at these events. Given the innate spontaneity of these events, traditional approaches to HIV prevention (such as planning to carry condoms, serosorting, on-site HIV testing) are less feasible. Instead, it may be that HIV-negative men who engage in spontaneous group sex are appropriate candidates for pre-exposure prophylaxis (PrEP), which has been found to be an effective HIV prevention strategy among MSM [34]. However, it is worth noting that adherence to PrEP is necessary for its efficacy [35] and more research would be necessary to determine the feasibility and acceptability of using PrEP with this population. It is also possible that more motivational or cognitive-behavioral techniques could be used to better prepare MSM for these events. For example, couples HIV testing and counseling approaches now typically include discussions of sexual agreements within the relationship, in order to facilitate open communication [36]. These discussions could be expanded to include specific plans to remain safe, in the event of a GSE. Given the high frequency of GSEs observed, HIV counseling and testing efforts with individual MSM may benefit from including a discussion of the broader range of sexual events—both planned and spontaneous—one might encounter.

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Table 1Demographic characteristics of men who have participated in a group sexual encounter ($n = 1815$)

	<i>n</i>	%
Race or Ethnicity		
Caucasian / White	1119	61.7
African American / Black	263	14.5
Latino	203	11.2
Asian / Pacific Islander	27	1.5
Multiracial or "Other"	202	11.1
HIV Status		
Negative	1194	65.8
Positive	427	23.5
Unknown	194	10.7
How do you think of yourself (sex role)		
Bottom (100%)	263	14.5
Versatile Bottom	459	25.3
Versatile (50/50)	468	25.8
Versatile Top	409	22.5
Top (100%)	216	11.9
Sexual identity		
Gay	1410	77.7
Bisexual	363	20
Queer (has sex with men)	29	1.6
Heterosexual (has sex with men)	13	0.7
Currently in a relationship		
Yes	567	31.7
Has had anal sex with a male in the last 90 days		
Yes	1663	91.6
Has had unprotected anal sex with a male in the last 90 days		
Yes	1176	64.8

Table 2
Sexual behavior and substance use differences by the most recent type of group sexevent ($n = 1815$)

Contextual factors of most recent encounter involving more than one person	The most recent time you engaged in any sexual activity with more than one other person, what kind of experience was it?												
	Group a Threesome $n = 1238$			Group b Spontaneous group sex $n = 358$			Group c Organized sex party $n = 219$			2	df	p	Post hoc [†]
	n	%		n	%		n	%					
How long ago was it?													
Within past month	410	33.1	158	44.1	78	35.6	17.74	6	0.01			a b	
One to three months	263	21.2	73	24.4	42	19.2							
Four to twelve months	245	19.8	49	13.7	45	20.5							
More than a year	320	25.8	78	21.8	54	24.7							
In a relationship at the time?													
Yes	408	33.0	123	34.4	52	23.7	8.27	2	0.02			a, b > c	
Did your partner know about this experience? ($n = 583$)													
Yes, I attended with my partner	181	44.4	39	31.7	10	19.2	19.20	4	0.001			a > b, c	
Yes, I attended without my partner, but he knew/knows about it	57	14.0	29	23.6	13	25.0							
No, I attended without my partner, and he still doesn't know I went	170	41.7	55	44.7	29	55.8							
Substance use before or during this experience. (select all that apply)													
Alcohol (5 or more drinks)	396	32.0	147	43.9	71	32.4	17.76	2	< .001			b > a, c	
Erection drugs (Viagra, Cialis, etc.)	160	12.9	78	21.8	38	17.4	17.81	2	< .001			a < b	
Cocaine (coke, blow)	57	4.6	30	8.4	9	4.1	8.59	2	0.014			b > a, c	
Crystal meth (crystal, tina)	77	6.2	56	15.6	15	6.8	33.48	2	< .001			b > a, c	
Ecstasy (MDMA, X, E)	38	3.1	26	7.3	9	4.1	12.65	2	0.002			b > a, c	
GHB/GBL (gamma-Hydroxybutyric acid/gamma-Butyrolactone)	25	2.0	21	5.9	7	3.2	14.56	2	0.001			a < b	
Ketamine	9	0.7	15	4.2	1	0.5	NA		--			--	
Marijuana na/hash (pot, weed)	281	22.7	100	27.9	46	21.0	5.11	2	0.08			--	
Crack (rock, freebase)	15	1.2	10	2.8	3	1.4	NA		--			--	
Heroin	11	0.9	5	1.4	3	1.4	NA		--			--	

The most recent time you engaged in any sexual activity with more than one other person, what kind of experience was it?

Contextual factors of most recent encounter involving more than one person	Group a Threesome n = 1238		Group b Spontaneous group sex ^a = 358		Group c Organized sex party ^b = 219		2	df	p	Post hoc ^c
	n	%	n	%	n	%				
Poppers	348	28.1	137	38.3	74	33.8	14.49	2	0.001	a < b
Any stimulant use (cocaine, meth, crack)	142	11.5	67	18.7	26	11.9	13.18	2	0.001	b > a, c
What behaviors did you engage in during this experience (select all that apply)										
Insertive anal sex (topping) with a condom	490	39.6	113	31.6	73	33.3	9.26	2	0.01	a > b
Insertive anal sex (topping) without a condom	400	32.3	127	35.5	69	31.5	1.46	2	0.48	--
Receptive anal sex (bottoming) with a condom	469	37.9	144	40.2	65	29.7	6.92	2	0.03	a, b > c
Receptive anal sex (bottoming) without a condom	397	32.1	155	43.3	60	27.4	20.12	2	<.001	b > a, c
Giving head (blow job)	1089	88.0	312	87.2	179	81.7	6.41	2	0.04	a > c
Getting head (blow job)	1073	86.7	306	85.5	176	80.4	6.05	2	0.049	a > c
Mutual masturbation (jerking each other off)	817	66.0	242	67.6	134	61.2	2.60	2	0.27	--
Rimming someone else (eating ass)	577	46.6	185	51.7	88	40.2	7.29	2	0.03	b > c
Getting rimmed (having my ass eaten)	710	57.4	288	63.7	116	53.0	7.24	2	0.03	b > a, c
Fisting	40	3.2	23	6.4	12	5.5	8.29	2	0.02	a < b
Getting fisted	22	1.8	21	5.9	7	3.2	17.51	2	<.001	a < b
Pissing/being pissed on	112	9.0	68	19.0	32	14.6	28.71	2	<.001	a < b, c
Scat play (fecal play)	8	0.6	7	2.0	2	0.9	5.13	2	0.08	--
Felching (sucking cum out of ass)	23	1.9	29	8.1	17	7.8	40.28	2	<.001	a < b, c
Toy play (dildo, vibrators , etc .)	192	15.5	83	23.2	44	20.1	12.38	2	0.002	a < b
BDSM (bondage and domination, sadism and masochism)	84	6.8	53	14.8	23	10.5	23.10	2	<.001	a < b
	<i>Md</i>	<i>IQR</i>	<i>Md</i>	<i>IQR</i>	<i>Md</i>	<i>IQR</i>	<i>2</i>	<i>df</i>	<i>p</i>	
How many men did you have sex with during this experience	2	2-3	4	2-5	4	2-6	254	2	0.001	a < b, c

^cPartial chi-square used for post hoc

*Kruskal Wallis Chi-Square (non-parametric equivalent to ANOVA). Paired Mann Whitney U used as a post hoc

NA: Not applicable. Chi-square test cannot be performed. Expected counts fell below 5 in one or more cells

Table 3

Multinomial logistic regression contrasting characteristics associated with type of last group sex event.

SECTION A. Referent outcome group:		Spontaneous Group Sex		Organized sex party		
Threesome	AOR	p	95% CI	AOR	p	95% CI
HIV Positive						
Yes	1.60	0.001	1.21 -- 2.11	1.94	<.001	1.38 -- 2.73
Cocaine, Meth, or Crack use during encounter						
Yes	1.72	0.002	1.22 -- 2.42	0.88	0.62	0.53 -- 1.47
Race is Non-White						
Yes	1.15	0.28	0.89 -- 1.47	1.078	0.63	0.80 -- 1.45
In a relationship at the time of the encounter						
Yes	1.08	0.55	0.84 -- 1.39	0.62	0.006	0.45 -- 0.87
Five or more alcoholic drinks during the encounter						
Yes	1.48	0.002	1.15 -- 1.90	1.03	0.83	0.75 -- 1.42
Receptive anal sex (bottoming) without a condom						
Yes	1.30	0.05	1.003 -- 1.68	0.67	0.02	0.48 -- 0.95
MPSE was in the last year						
Yes	1.19	0.24	0.89 -- 1.58	1.14	0.88	0.81 -- 1.59
SECTION B. Referent outcome group:		Spontaneous Group Sex		Organized sex party		
Organized sex party	AOR	p	95% CI	AOR	p	95% CI
HIV Positive						
Yes	0.82	0.33	0.56 -- 1.22			
Cocaine, Meth, or Crack use during encounter						
Yes	1.96	0.02	1.13 -- 3.39			
Race is Non-White						
Yes	1.06	0.77	0.75 -- 1.51			
In a relationship at the time of the encounter						
Yes	1.73	0.01	1.18 -- 2.55			
Five or more alcoholic drinks during the encounter						
Yes	1.43	0.05	1.001 -- 2.05			

SECTION A. Referent outcome group:		Spontaneous Group Sex		Organized sex party	
Threesome		AOR	p	AOR	p
				95% CI	95% CI
Receptive anal sex (bottoming) without a condom					
Yes		1.92	0.001	1.31 -- 2.83	
MPSE was in the last year					
Yes		1.04	0.83	0.70 -- 1.56	

All independent variables are coded "1 = yes" and "0 = no"

AOR: Adjusted Odds Ratio. **Bold** values indicate significance at $p < .05$