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IN THE SHADOWS OF A PREVENTION CAMPAIGN: SEXUAL RISK BEHAVIOR IN THE ABSENCE OF CRYSTAL METHAMPHETAMINE

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Because of its ability to reduce inhibitions and increase sexual drive, an emerging body of research has repeatedly identified crystal methamphetamine as a key variable in explaining new HIV transmissions among men who have sex with men (MSM). The implications of which have included the development of HIV prevention policies and public health campaigns centered on curbing methamphetamine use in urban gay centers throughout the United States. Data collected from a diverse sample of gay and bisexual men attending large–scale gay, lesbian, and bisexual community events in New York City (n = 738) indicated that 10.2% of men used methamphetamine recently (i.e., < 90 days) and that 29.9% of the sample had experienced a recent episode of unprotected anal intercourse. The majority, 81.1%, of those men reporting unsafe sex had not used methamphetamine recently. This analysis identified a bivariate relationship between methamphetamine use and sexual risk, but also highlights other variables that were significantly related to risky sexual behavior. Logistic regression analyses indicated that recent GHB use, temptation for unsafe sex, being younger in age, and identification as a barebacker were better indicators of risky sexual behavior than methamphetamine use. Policies focused on methamphetamine prevention may help to curb risky sexual behavior among select groups of individuals; however, these will not adequately address the sexual health of the many gay and bisexual men who, in the shadows of anti-methamphetamine policies and

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prevention programs, continue to engage in unsafe sex but are nonusers of methamphetamine.

If men [*sic*] define situations as real, they are real in their consequences (The Thomas theorem—Thomas & Thomas [1928, pp. 571–572]

The August 8, 2005, issue of *Newsweek* magazine ran a cover titled "America's Most Dangerous Drug." This article was written in response to the growing epidemic of methamphetamine (i.e., crystal meth, ice, tina, speed) throughout the United States (Jefferson, 2005). Newsweek was only one of many popular media outlets having exposed the emerging problems of methamphetamine in the United States (O'Bryan, 2005; Owen, 2004). According to the 2002 National Survey on Drug Use and Health, 5.3% of Americans aged 12 and older had tried methamphetamine at least once in their lives (i.e., 12.4 million Americans), with the majority of these individuals between the ages of 18 and 34 (Department of Health and Human Services, 2003).

Although alarming rates of methamphetamine use have been identified in U.S.–based mostly heterosexual samples (National Institute on Drug Abuse [NIDA], 2002), much higher rates of use have been identified specifically among men who have sex with men (MSM; Kurtz, 2005; Nanín & Parsons, 2006; Purcell, Moss, Remien, Parsons, & Woods, 2005; Semple, Patterson, & Grant, 2002; Wong, Chaw, Kent, & Klausner, 2005), with use as much as 10 times higher than in the general population (Colfax & Shoptaw, 2005). Although some studies have identified racial and ethnic differences in methamphetamine use among MSM (e.g., Millett, Peterson, Wolitski, Stall, 2006), others' findings have been mixed. For example, Grov, Parsons, and Bimbi's (2006) study of gay and bisexual men in Los Angeles and New York City found no racial or ethnic differences in recent methamphetamine use, suggesting methamphetamine may have transcended racial and ethnic boundaries within gay and bisexual men's communities.

Because of its ability to reduce inhibitions (including those for unsafe sex) and increase sexual drive, an emerging body of research has repeatedly identified crystal methamphetamine as a key variable in explaining new HIV transmissions among MSM (Benotsch, Kalichman, & Cage, 2002; Colfax et al., 2005; Frosch, Shoptaw, Huber, Rawson, & Ling, 1996; Guss, 2000; Halkitis & Parsons, 2002; Halkitis, Shrem, & Martin, 2005; Hirshfield, Remien, Walavalkar, & Chiasson, 2004; Purcell, Parsons, Halkitis, Mizuno, & Woods, 2001; Semple, Patterson, & Grant, 2002). With few exceptions (Lampinen, 2005), this relationship between methamphetamine and sexual risk behavior among MSM has been virtually undisputed throughout academic discourse.

The development of widespread HIV prevention policies and social marketing campaigns (Nanín, Parsons, Bimbi, Grov, & Brown, 2006) centered around treating and preventing methamphetamine use in urban gay centers across the United States (see lifeormeth.com, tweaker.org, gmhc.org, crystalbreaks.org) has been one by-product of the mounting research having linked methamphetamine to HIV risk among MSM. Within both academic and community–based discourse on sexual risk behavior and substance use among MSM, methamphetamine has been placed at the epicenter of inquiry. For example, in response to the growing data both of increasing rates of methamphetamine use among gay and bisexual men and its link to HIV transmission risks, the New York City Department of Health and Mental Hygiene (NYC DOHMH) formed the Crystal Meth Task Force in 2004. It included staff from its

Mental Hygiene Division, the Bureau of HIV/AIDS, the Office of Gay and Lesbian Health, the Office of AIDS Policy Coordination, the STD Control Bureau, and the NYC Police Department. This task force was focused on increasing awareness in the gay community about methamphetamine and access to care for those currently using the drug (New York City DOHMH, 2004). In addition to these efforts, other New York City community–based organizations and local activists/leaders also took initiative in developing anti-methamphetamine educational, prevention, and treatment programs, such as social marketing campaigns (Osborne, 2003; Owen, 2004). One example of such a social marketing campaign were the "Huge Sale: Buy Crystal, Get HIV Free!" ads that have blanketed many of New York City's densely populated gay and bisexual neighborhoods since 2004 (Nanín et al., 2006). This shift in focus to targeting prevention/treatment of methamphetamine use as a HIV prevention strategy is understandable for two reasons. First, because of relationship between methamphetamine use and HIV transmission risks, and second, because, as the resources to treat and prevent HIV are continually growing scarce, it has become increasingly essential to focus HIV prevention efforts to those individuals and social groups whom are perceived to be "most" at risk for transmission.

It warrants mentioning that many studies, albeit not all (e.g., Buchacz et al., 2005; Koblin et al., 2006; Plankey et al., 2007), having linked methamphetamine to HIV risk have reported data from restricted samples such as only: HIV-positive MSM (Purcell et al., 2001; Purcell et al., 2005; Semple, Patterson, & Grant, 2002, 2003), MSM diagnosed with syphilis (Taylor, Aynalem, Smith, Montoya, & Kerndt, 2007), methamphetamine–dependent MSM (Shoptaw et al., 2005); active club drug users (Halkitis, Shrem, & Martin, 2005; Kurtz, 2005); active methamphetamine users selected from samples of active club drug users (Halkitis, Green, & Carragher, 2006; Halkitis, Mukherjee, & Palamar, 2007). Thus, the applicability of these studies' findings for developing health educational policies and prevention programs targeted toward larger gay and bisexual men's communities is unclear, as the generalizability of such findings from nonrepresentative samples is questionable. To that end, an additional limitation of most research having linked methamphetamine causally to HIV transmission is that many of these findings have been based on bivariate findings (Rhodes, 1996; Rhodes & Stimson, 1994; Worth & Rawstorne, 2005); when the true nature of this relationship may be the product of a complex interaction among social, environmental, and psychological variables (Halkitis, Parsons, & Stirratt, 2001; Nanín & Parsons, 2006; Parsons, 2005a; Parsons, Kelly, & Weiser, 2007). Other variables that have been shown to be associated with risky sexual practices include sexual compulsivity (Benotsch, Kalichman, & Pinkerton, 2001; Kalichman & Rompa, 1995; O'Leary et al., 2005); temptation for unprotected sex (Parsons et al., 2003; Parsons, Halkitis, Bimbi, & Borkowski, 2000); age (Centers for Disease Control and Prevention [CDC], 2001); club drug use, in addition to (or other than) methamphetamine (Purcell et al., 2001; Purcell et al., 2005); and identity as a barebacker, or person who intentionally pursues unprotected sex (Halkitis, Wilton, et al., 2005; Parsons, 2005b; Parsons & Bimbi, 2007). Many of these variables have not been explored as potentially relevant to the relationship between methamphetamine and sexual risk behavior.

This analysis does not seek to dispute the bivariate relationship methamphetamine has been shown to have with sexual risk behavior among MSM. Instead, we wish to expand on this research by highlighting an additional portion of this sexual risk discourse, which, should it not be discussed, may be overshadowed by current

antimethamphetamine policies and methamphetamine–focused HIV prevention programs (Worth & Rawstorne, 2005). In recent years, sexual risk behaviors are again on rise among MSM (CDC, 2003a, 2003b, 2007; Kippax & Race, 2003), many who may not be active methamphetamine users (Parsons, 2005a, 2005b). Many prevention policies developed specifically for MSM around methamphetamine cessation or prevention have also been inherently based in reducing transmission risks for HIV and other sexually transmitted infections (STIs). Unfortunately, these policies may exclude a disproportionate number of MSM who are engaging in sexual behaviors that put them at risk for HIV transmission but do *not* use methamphetamine. Addressing this limitation, this analysis sought, from a community–based sample of gay and bisexual men, to (a) identify the proportion that have used methamphetamine recently, (b) explore its relationship to sexual risk behaviors, and (c) describe the prevalence of sexual risk behaviors among those men who are not active methamphetamine users. In so doing, this analysis further sought to (d) identify other factors that predict sexual risk behavior while also controlling for the effects of methamphetamine use.

METHODS

PARTICIPANTS AND PROCEDURE

A cross–sectional street–intercept survey method (Miller, Wilder, Stillman, & Becker, 1997) was adapted to survey 1,214 gay and bisexual men at a series of gay, lesbian, and bisexual (GLB) community events in New York City in the fall of 2004 through the Sex and Love Project v3.0 (Grov et al., 2007; Nanín et al., 2006). This approach to collecting data has been used in numerous studies (Carey, Braaten, Jaworski, Durant, & Forsyth, 1999; Chen, Kodagoda, Lawrence, & Kerndt, 2002; Rotheram–Borus et al., 2001), including those focused on GLB persons (Benotsch et al., 2002; Kalichman et al., 2001) and has been shown to provide data that are comparable to those obtained from other more methodologically rigorous approaches (Halkitis & Parsons, 2002). All procedures were approved by the author's institutional review board.

At each 2–day event, the research team hosted a booth, and a staff member actively approached each person who passed the booth. Potential participants were provided with information about the project and offered the opportunity to participate. The response rate was high, with 87.0% of those approached consenting to participate. The anonymous survey required 15–20 minutes to complete, and to promote additional confidentiality, participants were provided a clipboard so that they could step away from others to complete the questionnaire. On completion, participants deposited their own survey into a secure box at the booth. Those who completed the survey were provided with a voucher for free admission to a movie as an incentive. Project staff entered data into an SPSS database and later verified data entry for its accuracy.

Most men (n = 738, 60.8%) indicated they were not in a monogamous relationship. As this study was chiefly interested in sexual behaviors with non–main partners, only the data from those 738 men in nonmonogamous relationships were utilized for this analysis.

MEASURES

Demographics. Participants were asked to indicate their age (in years), sexual identity, education (in eight ordinal categories), and race and ethnicity (by checking all that applied to them). Response categories to race and ethnicity included "African

American," "Asian/ Pacific Islander," "European/White," "Hispanic/Latino," and "Other, specify."

Recent Unprotected Sex. Participants indicated their unsafe sexual behavior with non–main partners (unprotected anal receptive and insertive) in the last 90 days. These values were dichotomized (1 = yes, 0 = no).

Sexual Compulsivity. Sexual Compulsivity was measured using Kalichman et al.'s (1994) Sexual Compulsivity Scale, a 10–item, 4–point Likert–type scale that assesses the impact of sexual thoughts on daily functioning and the inability to control sexual thoughts and/or behaviors. Summary scores ranged between 10 and 40 (M = 20.42, SD = 6.67) with higher scores indicating a greater degree of sexual compulsivity–like problems. Cronbach's alpha was high among the men sampled (α = .89).

Temptation for Unsafe Sex. Temptation for unsafe sex was measured using Parsons et al.s (2000; 2003) Temptation Scale, a 10–item, 4–point Likert–type scale that assesses different situations to which an individual may be tempted to engage in sex without a condom (i.e., think risk is low, really want affection, under the influence of alcohol or drugs). Items are anchored at 1 = "not at all" and 4 = "very much." Higher scores correspond to greater likelihood that an individual will engage in unsafe sex (α = .91, M = 15.55, SD = 7.30, Range = 10–40).

Identity as a Barebacker. Participants indicated if they self–identified as barebackers (i.e., a person who intentionally seeks out sex without condoms; Parsons & Bimbi, 2007). Response choices were dichotomized (1 = yes, 0 = no).

Club Drug Use. Participants indicated if they had used methamphetamine, cocaine, MDMA/ecstasy (methylene–dioxy–methamphetamine), GHB (gamma–hydroxy–butyrate), and/or ketamine both in their lifetimes and recently (i.e., < 90 days). Responses were dichotomized (1 = yes, 0 = no).

ANALYTIC PLAN

Where appropriate, statistical t tests, χ^2 tests, odds ratio, and difference of proportion tests have been used throughout these analyses (Daniel, 1996). In addition, a five–step logistic regression was conducted in an effort to disentangle the relationships between variables such as sociodemographic characteristics, recent drug use, and sociopsychological variables to better understand their impact in predicting recent episodes of unprotected anal intercourse.

RESULTS

The sample was diverse with more than one third being gay and bisexual men of color. The mean age was 37.44 (range = 18–78, SD = 11.48) and approximately 15.2% (n = 112) were HIV-positive (see Table 1 for full demographics). Most men were gay identified (92.4%, n = 682) with the remainder self–identified as bisexual. Seventy–six men (10.3%) indicated they were barebackers.

In total, 20.7% (n = 153) of men reported having ever used methamphetamine at one point in their lives, while 10.2% (n = 75) reported recent use (i.e., < 90 days). There were no racial or ethnic differences in reported use of methamphetamine (recent

TABLE 1. Sample Characteristics

	n	%
Race and ethnicity		
African American	65	8.8
Asian/Pacific Islander	52	7.0
Hispanic/Latino	125	16.9
White	459	62.2
Other	37	5.0
Sexual identity		
Gay	682	92.4
Bisexual	56	7.6
HIV Serostatus		
Negative	557	75.5
Positive	112	15.2
Refused/Uknown	69	9.3
Education		
No answer provided	23	3.1
High school or less	69	9.3
Some college	182	24.7
Bachelors	218	29.5
Graduate school	246	33.3
Relationship status		
No answer provided	29	3.9
Single, not dating	300	40.7
Single, casually dating	227	30.8
Partner, nonmonogamous	182	24.7
Income		
No answer provided	36	4.9
< $20K	141	19.1
$20K to < $40K	139	18.8
$40K to < $60K	171	23.2
$60K to < $80K	95	12.9
$80K to < $100K	79	10.7
$100K+	77	10.4
Drug use, < 90 days		
Cocaine	82	11.1
MDMA/ecstasy	69	9.3
GHB	24	3.3
Ketamine	41	5.6
Crystal methamphetamine	75	10.2

or lifetime). Recent drug use for other club drugs was as follows: cocaine (*n* = 82, 11.1%), MDMA/ecstasy (*n* = 69, 9.3%), GHB (*n* = 24, 3.3%), and ketamine (*n* = 41, 5.6%).

At least one episode of unprotected anal intercourse (UAI) with a non–main partner in the last 90 days was reported by 29.9% (*n* = 221) of the men. This percentage captures those men who engaged in any unprotected *insertive* anal intercourse (*n* = 190, 25.7%) and/or unprotected *receptive* anal intercourse (*n* = 124, 16.8%). Compared with men who reported no recent UAI, men reporting at least once episode of UAI were significantly more likely to have used methamphetamine recently and men reporting methamphetamine use were significantly more likely to report UAI (Table 2). Compared with men reporting no UAI with HIV serodiscordant/uknown status partners, men reporting UAI with HIV serodiscordant/unknown status partners were significantly more likely to report recent methamphetamine use.

Looking at the data from a different perspective, 18.9% (38 of 201) of men who reported any recent UAI also reported recent use of methamphetamine. In contrast, the remaining 81.1% (163 of 201) of the men reporting any recent UAI had *not* used

TABLE 2. Unprotected Anal Intercourse and Methamphetamine Use, < 90 days

		n that used MA	% that used MA	Odds Ratio	95% CI (Lower)	95% CI (Upper)
Any unprotected anal intercourse, insertive or receptive						
Yes	(*n* = 221, 29.9%)[a]	38	18.9	2.8	1.7	4.6
No	(*n* = 429, 58.1%)	31	7.7			
Unprotected anal intercourse, insertive						
Yes	(*n* = 190, 25.7%)[a]	33	19.2	2.7	1.6	4.5
No	(*n* = 458, 62.1%)	35	8.2			
Unprotected anal intercourse, receptive						
Yes	(*n* = 124, 16.8%)[a]	31	28.2	4.8	2.8	8.2
No	(*n* = 521, 70.6%)	37	7.6			

[a]Percentages do not total 100 as not all men provided complete data on their sexual behavior and/or drug use.

methamphetamine recently. Essentially, only 5.1% of the total sample (38 of 738) reported *both* unsafe sexual behavior and recent methamphetamine use. Restated, only 10.2% (75 of 738) of the sample reported recent methamphetamine use, while 29.9% (221 of 738) of men sampled reported recent UAI, with 73.8% (163 of 221) of these *same* men having reported no recent methamphetamine use (81.1% [163 of 201] of those providing complete data; see Table 3).

In an effort to better disentangle the relationship between methamphetamine use and a variety of additional social and psychological variables, a five–step logistical regression was conducted to predict any recent UAI with non–primary partners. In the first step, the demographic variables of age, education, and racial status (White vs. non–White) were considered. The second step included each of the five drugs assessed, and the third step controlled for HIV serostatus (1 = HIV-positive). In step four, the sociosexual scales for sexual compulsivity and temptation for unsafe sex were added to the model, and the final step controlled for whether a person had identified as a barebacker (1 = yes; see Table 4).

Age, race, and education (step 1 of Table 4) provided little in terms of predicting recent UAI. Controlling for the effects of these other variables, the second step of the model indicated that both recent methamphetamine use and recent GHB use were *marginally* significant predictors (i.e., $p < .10$) of recent UAI (see step 2). Although it seemed HIV positive men were at a greater predicted likelihood for recent UAI (see steps 3 and 4), the strength of this relationship was diminished after controlling for temptation for unsafe sex, sexual compulsivity, and identity as a barebacker. Furthermore, the relationship between methamphetamine use and recent UAI was no longer significant after controlling for these other variables.

Nevertheless, recent GHB use was significantly related to recent UAI in later models (steps 3–5) such that even after controlling for other variables, recent GHB users were 4.6 times more likely to report recent UAI. In total, 72.7% (*n* = 16 of 22) of recent GHB users reported recent UAI. This is compared with 55.1% (*n* = 38 of 69) recent methamphetamine users who reported recent UAI.

DISCUSSION

Compared with national samples of predominantly heterosexual populations, researchers have found methamphetamine use to be more prevalent specifically among

TABLE 3. Methamphetamine use and unsafe sexual behavior, < 90 days

	n	%
Any unprotected anal intercourse, receptive or insertive[a]	221	29.9%
Among those who had risky sex (complete drug data on *n* = 201)		
Used methamphetamine recently	38	18.9%
Did not use methamphetamine recently	163	81.1%
No unprotected anal intercourse[a]	429	58.1%
Among those who did not have risky sex (complete drug data on *n* = 401)		
Used methamphetamine recently	31	7.7%
Did not use methamphetamine recently	370	92.3%
Used methamphetamine recently[a]	75	10.2%
Among recent users (complete sex data on *n* = 69)		
Any unprotected anal intercourse, receptive or insertive	38	55.1%
No unprotected anal intercourse	31	44.9%
Did *not* use methamphetamine recently[a]	609	82.5%
Among non–recent users (complete sex data on *n* = 533)		
Any unprotected anal intercourse, receptive or insertive	163	30.6%
No unprotected anal intercourse	370	69.4%

[a]These percentages do not total 100 as not all men provided complete data on their sexual behavior and/or drug use.

MSM (Colfax & Shoptaw, 2005), and, in particular, urban gay and bisexual men (Kurtz, 2005; Nanín & Parsons, 2006). The relationship between sexual risk behavior and the use of methamphetamine has been well documented (Colfax et al., 2005; Halkitis, Shrem, et al., 2005; Halkitis & Parsons, 2002; Hirshfield et al., 2004; Semple et al., 2002). In an effort to prevent the spread of HIV and other STIs, many health and community–oriented service providers in urban centers, such as New York City, have developed policies, programs, and social marketing campaigns aimed at primary and secondary prevention of methamphetamine use among gay and bisexual men (Nanín et al., 2006; NYC DOHMH, 2004; Owen, 2004).

Although we do not doubt the physical, psychological, and social effects methamphetamine has on lowering inhibitions and increasing sex drive, it is a plausible argument that myriad other person and social variables play an important role in this relationship (Parsons, 2005a; Rhodes, 1996; Rhodes & Stimson, 1994; Worth & Rawstorne, 2005). To what extent are within–person factors such as sensation-seeking personality types playing a role both in the use of methamphetamine and in the pursuit of risky unsafe sex? To what extent have societies' sex–negative and homophobic attitudes facilitated gay and bisexual men's motivation to, and complacency with, substance use such as methamphetamine? These types of questions have not been well explored in the academic discourse that has linked methamphetamaine to HIV risk. Using a community–based sample of gay and bisexual men, this analysis sought to identify the prevalence of methamphetamine use (10.2%), the prevalence of UAI (29.9%), the connection between the two, and other variables that may also play a role in this connection.

Many of the current campaigns, policy initiatives, and health educational programs that have been designed to treat or prevent methamphetamine use among gay and bisexual men have had, at a minimum, a foundation in also preventing the spread of HIV/STIs (Nanín et al., 2006). Certainly, many of these programs and policy initiatives have also sought to address myriad additional detrimental effects attributed to

methamphetamine use, but we believe it is methamphetamine's connection to HIV risk behaviors that have been at the crux. This analysis found that many gay and bisexual men who engage in unsafe sexual behavior are *not* active methamphetamine users. Thus pigeonholing methamphetamine not only excludes (and to some extent forgives) nonmethamphetamine using men who engage in UAI but may also overlook the broader political, social, and psychological forces continuing to drive new HIV transmissions among sexual minorities. By channeling finite fiscal capital into methamphetamine–focused HIV prevention initiatives, are we adequately meeting the HIV prevention needs of those at risk for HIV transmission? In revisiting the opening quote of this manuscript taken from the Thomas theorem, what will be the long–term consequences of misidentifying/overidentifying the relationship between methamphetamine and sexual behavior among gay and bisexual men?

To date, much of the research on methamphetamine use among MSM has not fully discussed two findings: (a) Although compared with the US population a larger proportion of MSM are active methamphetamine users, a vast *majority* of MSM do not use the drug and (b) a disproportionate number of MSM currently engaged in risky sexual behaviors do so without the influence of methamphetamine. An exclusive focus on methamphetamine as a strategy to prevent a majority of new HIV infections may be a disingenuous approach, particularly for the vast majority of those MSM who may be placing themselves at risk for transmission but do not use the drug (Nanín & Parsons, 2006; Parsons, 2005a).

Out of 738 men, our data identified 38 individuals who had used methamphetamine and experienced a recent episode of unsafe sex, or 5.1% of the sample. Equally, our data also identified 31 men who had used methamphetamine but did not report a recent episode of unprotected anal sex. Certainly, there was a significant relationship between UAI and methamphetamine use, as a greater proportion of recent users also reported unsafe sexual behavior; however, this is not to suggest that all (or even a majority of) methamphetamine users are engaged in risky sexual practices. In fact, among the men reporting any UAI, only 18.9% reported recent methamphetamine use. Research and policy initiatives need not abandon a focus on methamphetamine as a strategy to reduce HIV transmission but rather expand to be more inclusive.

Understandably, we recognize that a variety of prevention strategies is essential to address a range of behaviors among a variety of subgroups, and this analysis does not argue that we completely drop meth–related interventions/policies. Nevertheless, it is doubtful that it will be cost effective to shift considerable resources from HIV prevention efforts for gay and bisexual men in general to HIV prevention targeting only those men using methamphetamine. Such efforts could then fail to reach the significant majority of the gay and bisexual men at risk of HIV transmission who are not using methamphetamine. That is, the elimination of methamphetamine from the lives of gay and bisexual men would not, based on these data, have a significant impact on reducing sexual risk and curbing the HIV epidemic. Additional theory–driven research is needed to both better explain sexual risk behavior among gay and bisexual men and apply these findings via effective health education and prevention policies/programs.

It is essential to highlight the limitations of this analysis. Clearly, these do not generalize to all gay and bisexual men, as this sample was limited to those who attended large–scale GLB events in New York City. It does, however, give a very comprehensive picture about the types of individuals that do attend these events and constitute a considerable (and accessible) portion of the gay, bisexual, and MSM communities in New York City. Although efforts were taken to ensure confidentiality,

TABLE 4. Logistic Regression predicting recent unprotected anal sex (< 90 days) [a]

	Step 1				Step 2				Step 3				Step 4				Step 5			
Model χ^2	1.87				19.41 *				46.08 ***				133.8 ***				146.1 ***			
df	3				8				9				11				12			
Nagelkerke R^2	0.005				0.05				0.11				0.30				0.33			
	β	Exp β	95% CI	Sig.	β	Exp β	95% CI	Sig.	β	Exp β	95% CI	Sig.	β	Exp β	95% CI	Sig.	β	Exp β	95% CI	Sig.
Constant	-0.33				-0.38				-0.20				-2.46			***	-2.20			***
Person of color, 1 = yes	0.08	1.08	0.73 -- 1.60		0.05	1.06	0.71 -- 1.58		-0.15	0.86	0.57 -- 1.31		-0.40	0.67	0.42 -- 1.07	^	-0.36	0.70	0.44 -- 1.12	
Age	0.00	1.00	0.98 -- 1.01		0.00	1.00	0.98 -- 1.01		-0.01	0.99	0.97 -- 1.01		-0.02	0.98	0.96 -- 1.00	*	-0.02	0.98	0.96 -- 1.00	*
Education	-0.04	0.96	0.87 -- 1.06		-0.07	0.94	0.85 -- 1.04		-0.05	0.95	0.86 -- 1.05		-0.02	0.98	0.88 -- 1.10		-0.03	0.97	0.87 -- 1.08	
Cocaine use < 90 days, 1= yes					0.42	1.53	0.79 -- 2.95		0.56	1.74	0.89 -- 3.43		0.25	1.29	0.62 -- 2.69		0.39	1.48	0.70 -- 3.13	
MDMA/ecstasy use < 90 days, 1 = yes					-0.23	0.80	0.39 -- 1.62		-0.34	0.71	0.34 -- 1.48		-0.55	0.58	0.25 -- 1.32		-0.61	0.54	0.23 -- 1.29	
GHB use < 90 days, 1 = yes					1.21	3.34	0.91 -- 12.3	^	1.53	4.60	1.21 -- 17.5	*	1.59	4.93	1.15 -- 21.1	*	1.53	4.62	1.04 -- 20.6	*
Ketamine use < 90 days, 1 = yes					0.13	1.13	0.45 -- 2.83		0.27	1.31	0.51 -- 3.37		0.75	2.11	0.75 -- 5.93		0.80	2.23	0.79 -- 6.32	
Methamphetamine use < 90 days, 1 = yes					0.58	1.78	0.91 -- 3.48	^	0.10	1.10	0.54 -- 2.27		-0.28	0.75	0.33 -- 1.73		-0.36	0.70	0.29 -- 1.66	
HIV positive, 1 = yes									1.41	4.11	2.39 -- 7.09	***	0.72	2.05	1.11 -- 3.79	*	0.52	1.68	0.88 -- 3.22	
Sexual compulsivity scale total score													0.02	1.02	0.99 -- 1.06		0.03	1.03	0.99 -- 1.06	
Temptation for unsafe sex scale total score													0.14	1.15	1.11 -- 1.19	***	0.11	1.12	1.08 -- 1.16	***
Self-identified as a barebacker, 1 = yes																	1.44	4.21	1.81 -- 9.78	***

[a]Although many of the independent variables are related to one another, multicollinearity was not present. *$p < .10$. **$p < .05$. ***$p < .001$.

there was potential for biased responses owing to social desirability in the reporting of sensitive information. As with all social research, these factors must be considered when evaluating the data.

The survey instrument used for this analysis assessed a broad range of variables related to psychosocial and sexual health, relationships, and behaviors. Such an instrument helps provide a general perspective about a variety of characteristics; however, it has its limitations. Many of the questions on this survey were quantitative and close–ended. Additional qualitative research is necessary to better capture the full range of experiences.

This analysis did not seek to refute others' findings that have linked unsafe sexual behavior to methamphetamine use. Although many previous researchers have identified relationships between methamphetamine use and unsafe sexual behavior in restricted samples that may not be reflective of larger gay, bisexual, and MSM communities (Halkitis et al., 2005; Halkitis et al., 2006; Halkitis, Shrem, et al., 2007; Kurtz, 2005; Purcell et al., 2001; Purcell et al., 2005; Semple et al., 2002, 2003; Shoptaw et al., 2005), our data also found a significant bivariate relationship between methamphetamine use and unsafe sex. Nevertheless, multivariate logistic regression, and subsequent controlling for the effects of other sociopsychological variables, suggests that a wide variety of experiences and within–person factors are also related to sexual risk behavior—so much so that the potential for any relationship between methamphetamine use and UAI was completely mitigated in analyses. As would be expected, identity as a barebacker was highly predictive of actual reported sexual risk behavior, as was recent GHB drug use, being younger, and temptation for unsafe sexual behavior. Although researchers have previously found a relationship between sexual compulsivity and unsafe sexual behavior (Benotsch et al., 2001; Kalichman & Rompa, 1995; O'Leary et al., 2005), this was not identified in the current analyses. Understanding that the bivariate relationship between methamphetamine and unsafe sex might be better explained by other variables, our findings highlight the need to expand HIV prevention and educational discourse to better address broader social and psychological factors that are driving HIV transmissions.

Finally, as a word of caution, the multivariate logistic regressions utilized in this analysis have identified other variables that served as significant predictors of recent unsafe sex. One such variable was recent use of GHB; however, this finding must be interpreted with caution. Only 22 men reported recent GHB use. Although compared with men who used methamphetamine (38 of 69; 55.1%), unsafe sex was more *common* among GHB users (16 of 22; 72.2%), the gross magnitude must be taken into consideration (i.e., only 16 GHB users who reported unsafe sex vs. more than double the amount of methamphetamine users who reported unsafe sex). Thus, this analysis does not call for the development of massive GHB health education and prevention policies but rather to use these findings as catalysts for understanding the multidimensional and complex process involved in understanding HIV transmission risks.

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